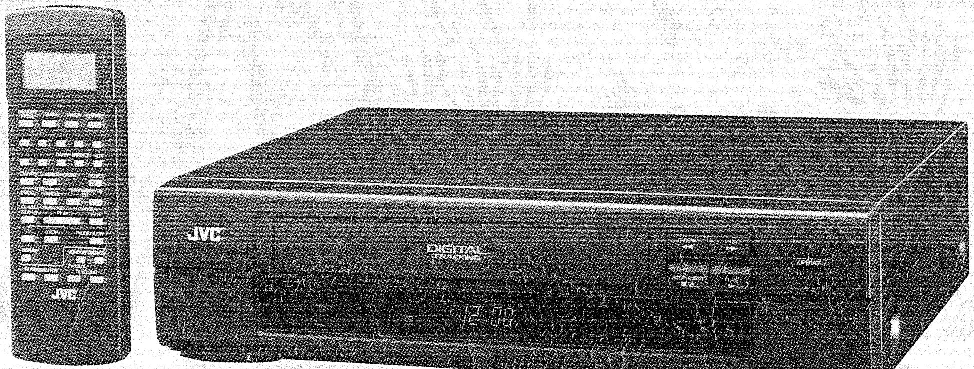
JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-DX22E/EG



VHS
PAL

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-DX22EG)*

GENERAL

Power requirement : AC 220 – 240 V∼, 50/60 Hz
Power consumption : 19 W
Temperature
Operating : 5°C to 40°C
Storage : –20°C to 60°C
Operating position : Horizontal only
Dimensions (WxHxD) : 360 x 89 x 302 mm
Weight : 4,3 kg
Format : VHS PAL standard
Tape width : 12.65 mm
Tape speed : 23.39 mm/sec
Maximum recording time : 240 min. with E-240 video cassette

VIDEO

Signal system : PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system : Rotary, slant azimuth two-head helical scan system
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output : 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio : 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution : 250 lines

AUDIO

Recording system : Longitudinal track
Input : –3.8 dBs, (CENELEC standard) more than 50 k-ohms, unbalanced
Output : –3.8 dBs, (CENELEC standard) less than 1 k-ohm, unbalanced (100 k-ohms, load)
Frequency range : 70 Hz to 10,000 Hz

TUNER

Tuning system : Voltage synthesized tuner
Channel coverage : VHF 47 – 89 MHz
104 – 230 MHz
230 – 470 MHz
UHF 470 – 862 MHz
Aerial output : UHF channel 36 (Adjustable 32 – 40)

TIMER

Clock reference : Quartz-crystal
Program capacity : 1-year programmable timer/ 8-programs
Memory backup time : Minumum 3 min.

ACCESSORIES

Provided accessories : Aerial cable,
Infrared remote control unit,
"R6" battery x 2

Design and specifications subject to change without notice.

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No. 82295
March 1992

TABLE OF CONTENTS

Section Title Page

Important Safety Precautions

INSTRUCTIONS

1. DISASSEMBLY AND MECHANISM ADJUSTMENTS

1.1 DISASSEMBLY 1-1
1.2 MECHANISM ADJUSTMENTS 1-4
1.3 MAIN MECHANISM PARTS 1-5
1.4 INSPECTION AND MAINTENANCE 1-7
1.5 MAIN PARTS REMOVAL AND REPLACEMENT 1-8

2. ELECTRICAL ADJUSTMENTS

2.1 PREPARATION 2-1
2.2 SWITCHING REGULATOR CIRCUIT 2-2
2.3 TIMER CIRCUIT 2-2
2.4 SERVO CIRCUIT 2-3
2.5 VIDEO CIRCUIT 2-4
2.6 AUDIO CIRCUIT 2-6
2.7 TUNER/IF CIRCUIT 2-7

3. CHARTS AND DIAGRAMS

3.1 CIRCUIT BOARD AND LOCATION 3-1
3.2 GENERAL INFORMATION 3-2
3.3 BOARD INTERCONNECTIONS 3-3
3.4 AUDIO BLOCK DIAGRAM 3-5
3.5 SERVO BLOCK DIAGRAM 3-7
3.6 VIDEO BLOCK DIAGRAM 3-9
3.7 MECHACON BLOCK DIAGRAM 3-11
3.8 PRE/REC BLOCK DIAGRAM 3-13
3.9 SWITCH REGULATOR AND REGULATOR (MAIN) SCHEMATIC DIAGRAMS 3-15
3.10 SWITCHING REGULATOR CIRCUIT BOARD 3-17
3.11 SERVO SCHEMATIC DIAGRAM 3-19
3.12 SERVO (MAIN) CIRCUIT BOARD 3-21
3.13 AUDIO SCHEMATIC DIAGRAM 3-23
3.14 AUDIO (MAIN) CIRCUIT BOARD 3-25
3.15 TUNER/IF (MAIN) SCHEMATIC DIAGRAM 3-27
3.16 TUNER/IF (MAIN) CIRCUIT BOARD 3-29
3.17 MECHACON SCHEMATIC DIAGRAM 3-31
(incluse VPS circuit=EG only)
3.18 MECHACON (MAIN) CIRCUIT BOARD 3-33
3.19 DECK TERMINAL, CASS. HOUSING, CAPSTAN MDA AND LOADING MDA SCHEMATIC DIAGRAMS 3-35
3.20 DECK TERMINAL, LOADING MDA, CASS. HOUSING, A/CTL HEAD AND FULL ERASE HEAD CIRCUIT BOARDS 3-36
3.21 MAIN (AUDIO, SERVO, VIDEO, MECHACON, TUNER/IF) CIRCUIT BOARD 3-37
3.22 VIDEO UNIT AND VIDEO SCHEMATIC DIAGRAMS 3-39
3.23 TERMINAL SCHEMATIC DIAGRAM & TERMINAL CIRCUIT BOARD 3-43
3.24 VIDEO (MAIN) AND VIDEO UNIT CIRCUIT BOARDS 3-45
3.25 TIMER/DISPLAY/SWITCH SCHEMATIC DIAGRAM 3-47
3.26 TIMER/DISPLAY/SWITCH CIRCUIT BOARD 3-49
3.27 PRE/REC SCHEMATIC DIAGRAM 3-51
3.28 PRE/REC CIRCUIT BOARD 3-53
3.29 REMOTE CONTROL SCHEMATIC DIAGRAM 3-55
3.30 RF CONVERTER SCHEMATIC DIAGRAM 3-56

4. EXPLODED VIEWS AND PARTS LIST

4.1 PACKING ASSEMBLY <M1> 4-1
4.2 CABINET ASSEMBLY <M2> 4-2
4.3 CHASSIS ASSEMBLY <M3> 4-3
4.4 MECHANISM ASSEMBLY <M4> 4-4
4.5 REMOTE CONTROL UNIT <M5> 4-6

5. ELECTRICAL PARTS LIST

SWITCH REGULATOR BOARD ASSEMBLY <01> 5-1
MAIN BOARD ASSEMBLY <03> <43> 5-2
VIDEO UNIT BOARD ASSEMBLY <05> 5-8
AUDIO/CONTROL HEAD BOARD <12> 5-11
TIMER/DISPLAY/SW BOARD ASSEMBLY <21> 5-11
UPPER DRUM BOARD <41> 5-12
DECK TERMINAL BOARD ASSEMBLY <51> 5-12
LOADING MDA BOARD ASSEMBLY <55> 5-12
CASSETTE HOUSING BOARD <56> 5-12
FULL ERASE HEAD BOARD <61> 5-12

6. TECHNICAL INFORMATIONS 6-1

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1. The Instructions shown pertain specifiecally to the Model HR-DX22EG. For detailed descriptions, be sure to consult the Instruction booklets of the other Models.
2. The following table lists the differing points between Models (suffixed HR-DX22E and HR-DX22EG) in this series.

Item		Model	HR-DX22EG	HR-DX22E
TV TUNER	Channel coverage	VHF	47 to 89 MHz	← *1)
			104 to 230 MHz	← *1)
			230 to 470 MHz	← *1)
		UHF	470 to 862 MHz	← *1)
TIMER	Memory back-up time		Minimum 3 mm	← *1)
	VPS		Built-in	No VPS capability

Notes: **1) ← The same as model at left.*

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▨) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

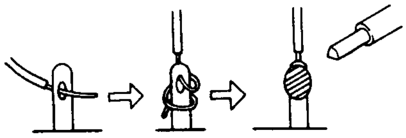


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

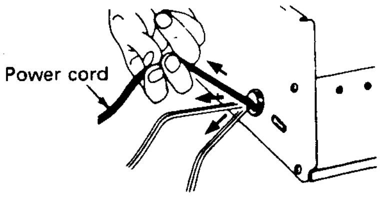


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

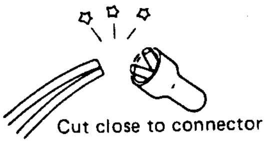


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

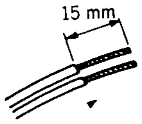


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

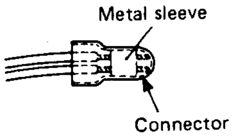


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

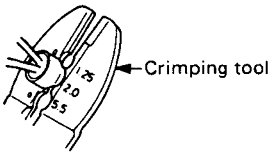


Fig. 6

(5) Check the four points noted in Fig. 7.

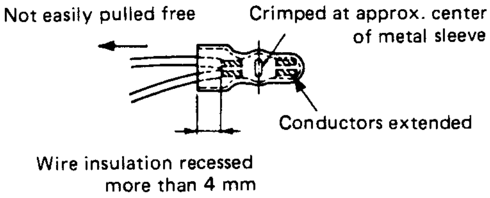

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

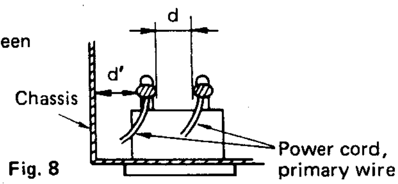


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

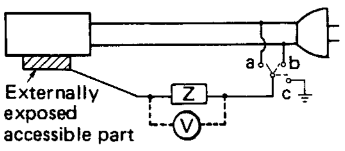


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

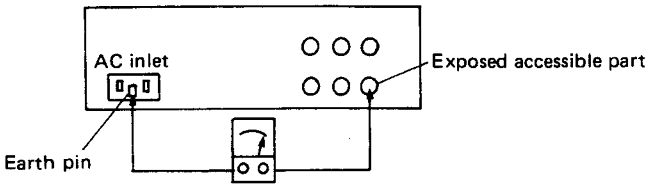


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

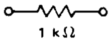
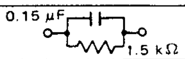
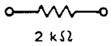
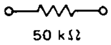
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

Safety Precautions

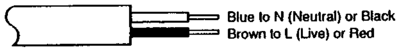
The rating plate and the safety caution are on the rear of the unit.

WARNING — DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT

Connection to the mains supply plug in the United Kingdom.

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with the following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

Omkopplaren OPERATE på denna apparat år sekundärt kopplad och skiljer inte apparaten från nätet i läge OPERATE OFF.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

BEMAERK: I stilling OFF er apparatet stadig forbundet med lysnettet Hvis det ønskes fuldstændig afbrudt skal netledningen trækkes ud.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

IMPORTANT:
Please read the "Precautions" section of this instruction manual before installing or operating the recorder.

WARNING
There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in Eastern European countries (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SEMAN-L signals.

IMPORTANT: It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.

VHS PAL HQ

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

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Contents

Controls, Indicators, And Connectors 4
Getting To Know Your Video Recorder 6

Getting Started With Your Video Recorder

Making The Right Connections 8
Handling Video Cassettes 9
Understanding The Display 10
Setting The Clock 11
Setting The Tuner 12

Basic Operation Of Your Video Recorder

Playback 14
Recording 15
Timer-Recording 16

Other Functions On Your Video Recorder

For Playback 18
For Recording 19
For Timer-Recording 20
For Editing 24

Precautions 25
Specifications 26
Special Note On Head Cleaning 26
In Case Of Difficulties 27

How To Use This Instruction Manual

This instruction manual has been designed with both new and experienced users in mind. The first half offers detailed, step-by-step instructions for setting up your video recorder, and on using its basic functions. The second half provides instructions on the many other functions available on your video recorder. So just by following the instructions in the "Getting Started" and "Basic Operation" sections of this manual, you can master all of your recorder's basic functions, including timer-recording. Once you're sufficiently familiar with basic operation, or if you're already an experienced video user, you can move on to the additional functions introduced on the following pages.

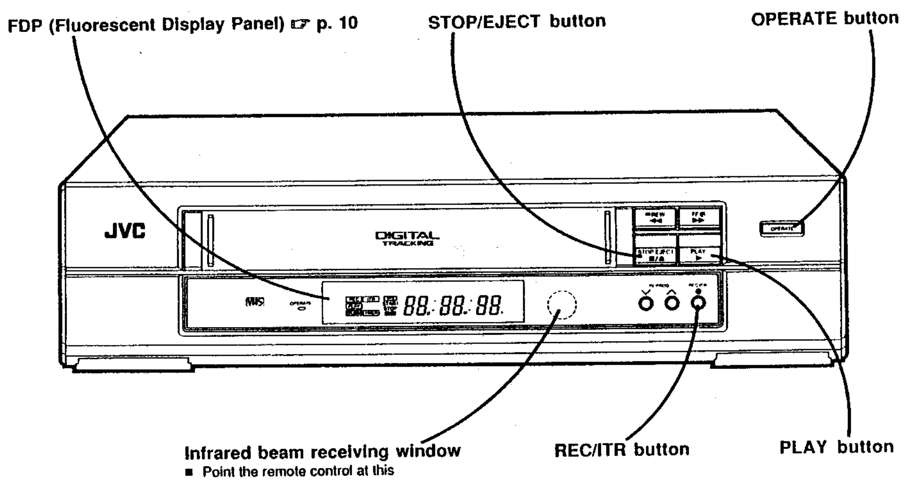
Related features have all been clustered together for easy reference, and their categories (playback, recording, timer, etc.) are easily recognisable by the symbol appearing in the page header. If you ever need to refer to another page for instructions or information, you will be told so by a ☞ mark pointing to the page number. Unless otherwise specified, operation buttons mentioned in the instructions refer to those located on the remote control, not those duplicated on the recorder.

Remember, you must use your video recorder correctly to fully enjoy it. Please use this manual effectively. It's the surest and quickest way to unlock the full potential of your new JVC video recorder.

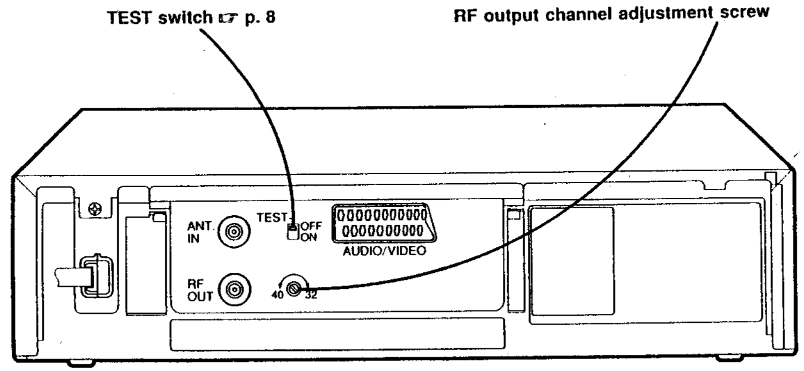
This instruction manual covers two model versions: "EG" and "E". Be sure to check which model you have purchased.
EG: VPS decoder built-in.
E: No VPS capability.

Controls, Indicators, And Connectors

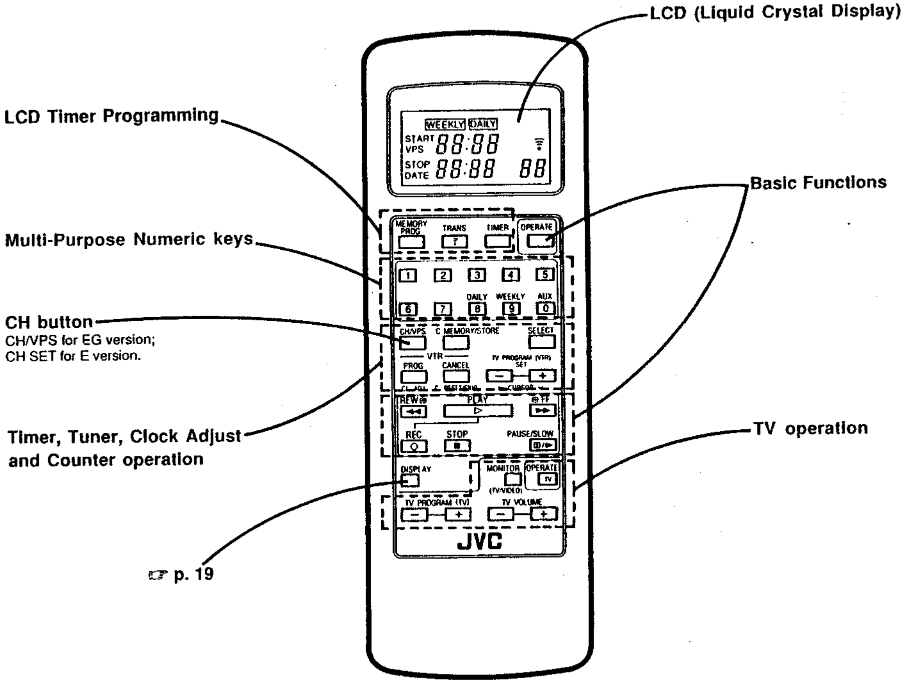
Front Panel

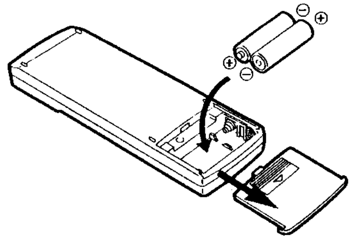

FDP (Fluorescent Display Panel) ☞ p. 10
STOP/EJECT button
OPERATE button
JVC
DIGITAL TRACKING
88.88.88.
Infrared beam receiving window
■ Point the remote control at this
REC/ITR button
PLAY button

Back Panel


TEST switch ☞ p. 8
RF output channel adjustment screw
ANT. IN
TEST
OFF
ON
AUDIO/VIDEO
RF OUT
40
32

Wireless Remote Control


LCD (Liquid Crystal Display)
LCD Timer Programming
Basic Functions
Multi-Purpose Numeric keys
CH button
CH/VPS for EG version;
CH SET for E version.
Timer, Tuner, Clock Adjust and Counter operation
TV operation
☞ p. 19
WEEKLY
DAILY
START VPS
STOP DATE
88:88
88
MEMORY PROG
TRANS
TIMER
OPERATE
DAILY
WEEKLY
AUX
CH/VPS
MEMORY/STORE
SELECT
VTR
PROG
CANCEL
TV PROGRAM (VTR) SET
REW
PLAY
FF
REC
STOP
PAUSE/SLOW
DISPLAY
MONITOR (TV/VIDEO)
OPERATE TV
TV PROGRAM (TV)
TV VOLUME
JVC



Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R6"-size batteries (provided) in the correct directions.
3. Replace the cover.

How To Use

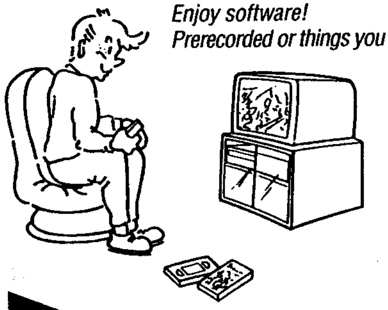
The remote control can operate most of your video recorder's functions, as well as basic functions of designated JVC TV sets.

- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

Getting To Know Your Video Recorder

The 3 Basic Ways Of Using Your Video Recorder

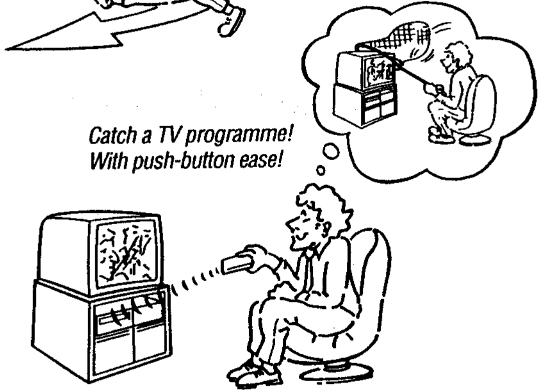
Enjoy software!
Prerecorded or things you've recorded!



Playback

With the video recorder properly connected to your TV set, viewing videos is as easy as pushing the Play button. Prerecorded VHS software is available just about anywhere, and your video recorder will let you enjoy it all. And, of course, you can enjoy those programmes you've recorded yourself too.

Catch a TV programme!
With push-button ease!



Recording

Just press the Record and Play buttons together on your remote control. The recorder will record whatever it is that you're watching. In other words, you can instantly "catch" a TV programme in progress to see it again later, show it to someone else, or keep it as part of your video library. Recording is possible for 4 hours on a single E-240 cassette.

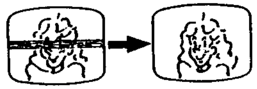
Record TV programmes while you're away.
Watch TV programmes when you want.

THE LATE SHOW

Timer-Recording

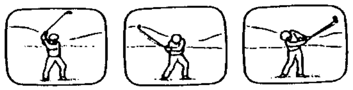
By using the built-in timer, you can set your video recorder to record TV programmes for you while you're asleep, while you're away, or while you're doing something else. Then you can watch those programmes later, whenever it's convenient, whenever you want. This is what's called "timeshifting", and now you can do it the JVC way.

Some Other Functions On Your Video Recorder



Digital Tracking

Automatically controls video tracking to maintain the best video picture, even with tapes with excessive tracking variations. A must for rental software viewing.

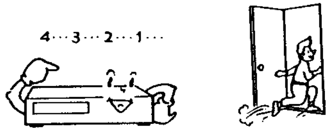


Slow Motion, Still Playback, and Frame Advance

Slows or stops the action so you can follow fast or exciting segments more closely and not miss a detail.

1-Year/8-Event Timer

Records up to 8 of your favourite television shows, movies, or sporting events while you are away from home for up to a year, or overnight while you are busy sleeping.

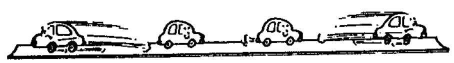


Instant Timer Recording (Off Timer)

Once recording is started, this function automatically stops recording after a preset length of time up to 4 hours and 59 minutes, freeing you to do other things.

Counter Memory Function

Returns to the counter reading of "0:00:00" to conveniently find a specific place on the tape automatically.

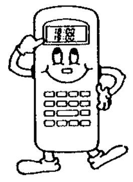


Shuttle Search With Lock Function

Allows you to skim backwards or forwards through the tape at 9 times normal speed.

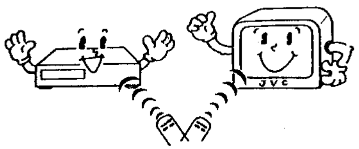
Power-Off Dimmer

When the recorder is on, the display panel is very bright and easy to read. When power is switched off, the display panel automatically dims, making it less conspicuous.



LCD Remote Control

Lets you operate the recorder from the comfort of your chair, plus it simplifies timer programming with a built-in LCD.



Recorder/TV Operation

The remote control can operate the recorder and a JVC TV set. It's like having two remotes in one.

Making The Right Connections

It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

A RECORDER-TO-TV CONNECTION

RF CONNECTION

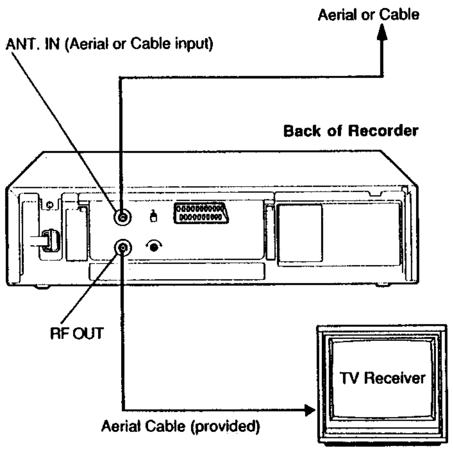
For TV sets without AV input terminals:

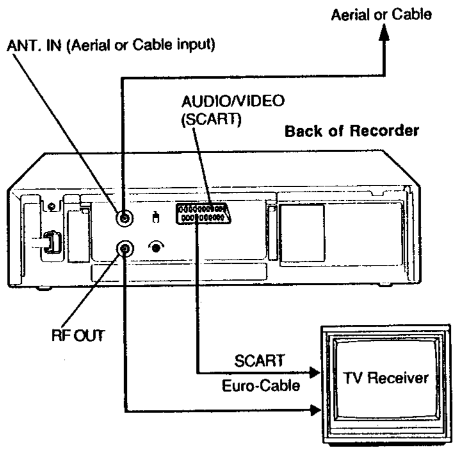
1. Connect the TV aerial cable to the recorder.
2. Connect the recorder to the TV's aerial terminal.

AV CONNECTION

For TV sets with AV input terminals:

1. Connect the aerial, recorder and TV as per "RF CONNECTION".
2. Connect the recorder to the TV's 21-pin SCART connector.

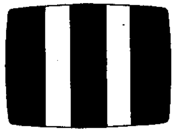




B ADJUST VIDEO CHANNEL (UHF 36)

With an RF connection, the video recorder sends picture and sound signals through the connecting cable to your TV on UHF channel 36.

TEST SIGNAL



1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Set your TV to the video channel. Tune to the real channel 36, to bring the two vertical white bars on the screen most clearly.
   - Your TV should be set to the channel designated for use with a video recoder or to a spare channel if there is not a specified channel.
4. Reset the TEST switch to OFF.

NOTE:

If some interference noise is seen on the screen because of broadcasts on neighbouring channels, it is necessary to shift the video channel from UHF channel 36. This is possible for UHF channels 32 through 40. Consult your JVC dealer for making this adjustment.

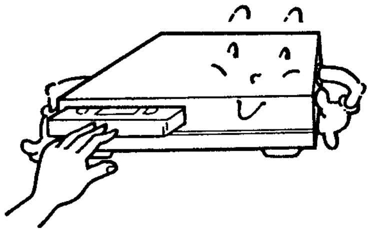
IMPORTANT:

To operate the recorder with your TV using an RF connection, it is always necessary to set your TV's channel to VIDEO CHANNEL. With an AV connection, set the TV to the VIDEO (or AV) mode.

Handling Video Cassettes

A LOADING A CASSETTE

1. Insert a cassette with its label side facing you.
   - If the cassette is not loaded firmly it will be ejected.
   - The counter resets automatically when a cassette is inserted.



B UNLOADING A CASSETTE

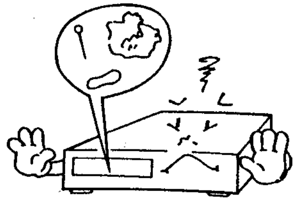
1. Press STOP/EJECT.
   - If the cassette will not eject, check to see if "TIMER" is lit on the display panel. If it is, press the TIMER button to turn it off.

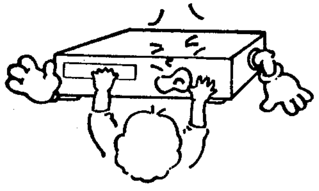
NOTES:

- Be sure to insert the cassette firmly into the slot; otherwise it will be automatically ejected.
- The automatic loading mechanism will operate only when the cassette is inserted correctly.

WARNING

- Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.
- Do not try to pull out a cassette once automatic loading has started.

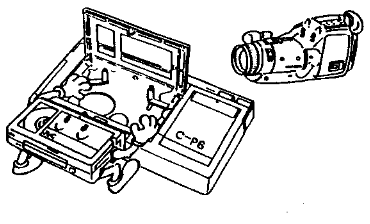




Usable Cassettes

Full-Size VHS
E-30 (SE-30**)
E-60 (SE-60**)
E-90
E-120
E-180 (SE-180**)
E-240

Compact VHS*
EC-30 (SE-C30**)
EC-45 (SE-C45**)

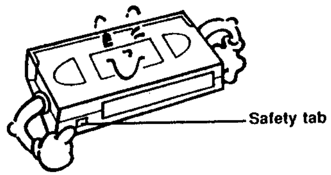


* Compact VHS camcorder recordings (PAL) can be played on this video recorder. Simply place the recorder cassette into a C-P6 Cassette Adapter and it can be used just like any full-sized VHS cassette.

** This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

Accidental Erasure Prevention

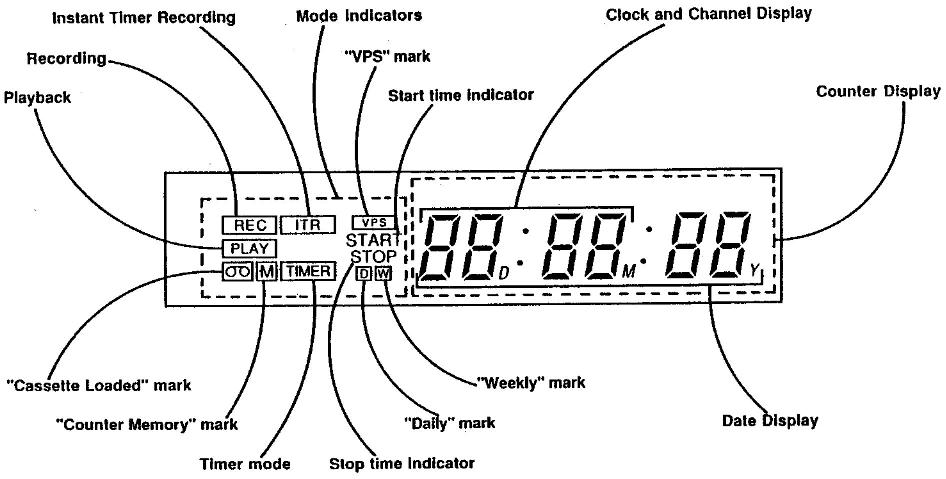
To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



Understanding The Display

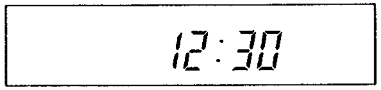
Display Panel

Your recorder's multi-function FDP (fluorescent display panel) offers important operation information at a glance.

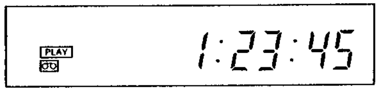

Instant Timer Recording
Mode Indicators
Clock and Channel Display
Recording
"VPS" mark
Start time indicator
Playback
Counter Display
REC
ITR
VPS
START
STOP
PLAY
M
TIMER
D
W
88:88:88
D
M
Y
"Cassette Loaded" mark
"Weekly" mark
"Counter Memory" mark
"Daily" mark
Date Display
Timer mode
Stop time indicator

- **Pressing DISPLAY lets you change the type of display: Counter, Clock, Date, or Channel.**
- **Whenever the recorder is turned off, the FDP's brightness is automatically dimmed.**

Clock Display

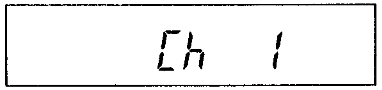


Counter Display



Date Display

Channel Display

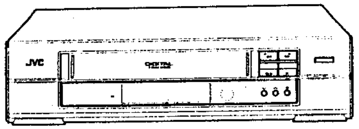


REALTIME TAPE COUNTER

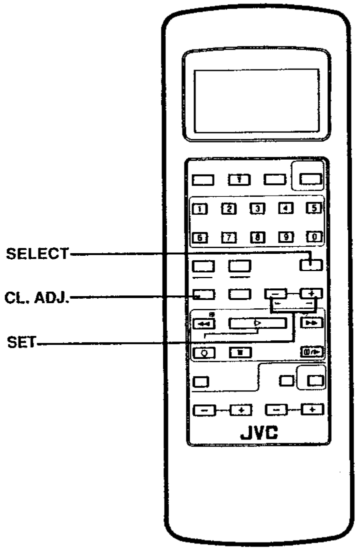
Your recorder's tape counter displays the hours, minutes, and seconds of a taped programme. As long as a tape is loaded, your recorder's display panel will show a counter reading unless you change it using the DISPLAY button. To reset the counter to "0:00:00", press C. RESET. Also the counter is automatically reset whenever you load a new cassette.

Setting The Clock

Since your video recorder bases all of its timer recording start and stop "decisions" on the time kept by its built-in clock, accurate setting of this clock is crucial for proper timer-recording results. Use the remote control to set the clock, while referring to the recorder's display panel.

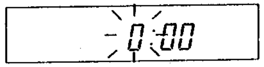


PLUG IN RECORDER


SELECT
CL. ADJ.
SET
JVC

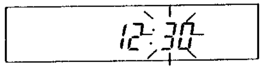
A ACCESS THE CLOCK

1 Press CL. ADJ.



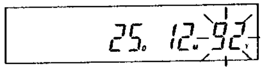
B INPUT THE TIME

2 Press SET to set the hour.
3 Press SELECT.
4 Repeat 2 and 3 to set the minute.



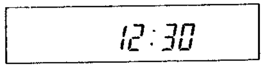
C INPUT THE DAY, MONTH, AND YEAR

5 Press SET to set the day.
6 Press SELECT.
7 Repeat 5 and 6 to set the month and year.



D START THE CLOCK

8 Press CL. ADJ.



NOTES:

- If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.
- If you are only adjusting the time, the Timer Program mode will be engaged first in step A. So press CL. ADJ. again.

POWER FAILURE INDICATOR

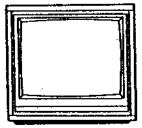
- The clock resets to "0:00" and starts blinking when there has been a power failure. Reset the time to return the clock display to normal.

TO MAKE CORRECTIONS

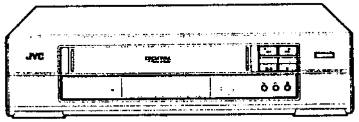
- Advance with SELECT to the item you wish to change and input new data with SET.

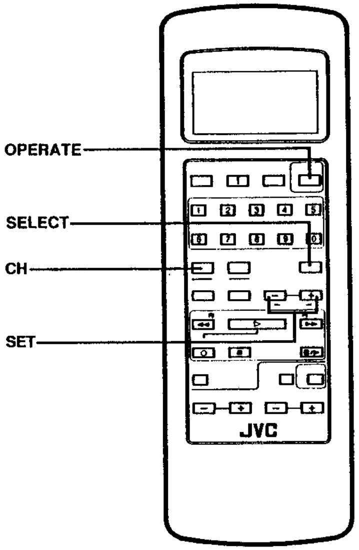
Setting The Tuner

The procedure introduced here lets you assign receivable channels in your area to channel positions on your recorder's tuner. Once stored, these can be accessed with the TV PROG. ∧/∨ buttons. During channel scanning, empty tuner channel positions will be skipped so you won't have to go through any "blank" channels to get to the one you want.



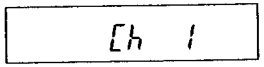
POWER ON;
SELECT VIDEO CHANNEL
(OR AV MODE)





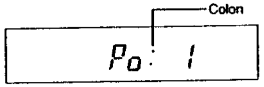
A TURN ON THE RECORDER

1 Press OPERATE.



B ACCESS THE TUNER

2 Press CH.

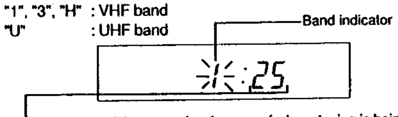


Means channel position 1 is empty.

C SELECT THE BAND

3 Press SELECT.

4 Press SET to select "1", "3", "H", or "U".
"1", "3", "H" : VHF band
"U" : UHF band

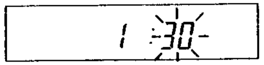


Tuning voltage giving a rough reference of where tuning is being performed in the corresponding band.

D SEARCH FOR RECEIVABLE CHANNELS

5 Press SELECT.

6 Keep SET+ pressed for a few seconds until automatic scanning starts.

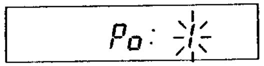


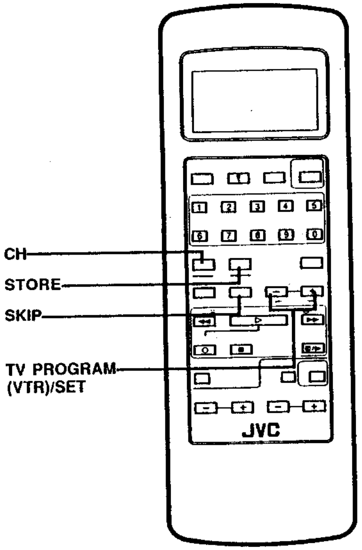
- When a broadcast is detected, automatic scanning stops.

E SELECT A CHANNEL POSITION

7 Press SELECT.

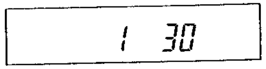
8 Press SET to select the tuner channel position where you wish to store that broadcast.





F STORE THE CHANNEL

9 Press STORE.



The band and tuning voltage corresponding to the stored broadcast is displayed.

G CONTINUE

10 Repeat steps 4 through 9 for other receivable broadcasts.

H TO CANCEL CHANNEL SET MODE

11 Press CH.

TO SKIP STORED CHANNELS

1 Specify the channel to be skipped using the TV PROGRAM (VTR) buttons or numeric keys.

2 Press CH until the channel position number indication appears.

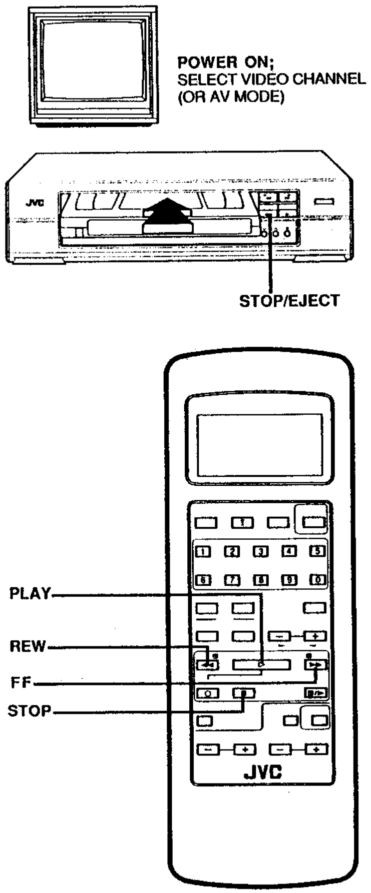
3 Press SKIP.
- The colon will appear.

4 Press CH to cancel the Channel Set mode.

NOTE:
If you don't want to store the broadcast detected in step 6, simply press SET and hold for a few seconds to continue automatic scanning.

Playback

The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.



A LOAD A CASSETTE

1 Insert a cassette.
- The recorder power will come on automatically.
- If the safety tab on the cassette is removed, playback will start automatically.

B TO START PLAYBACK

2 Press PLAY.

C TO STOP PLAYBACK

3 Press STOP.

D TO REWIND OR FAST-FORWARD

4 Press REW to rewind the tape.
5 Press FF to fast-forward the tape.
- Press STOP to stop rewind or fast-forward.

E TO EJECT THE TAPE

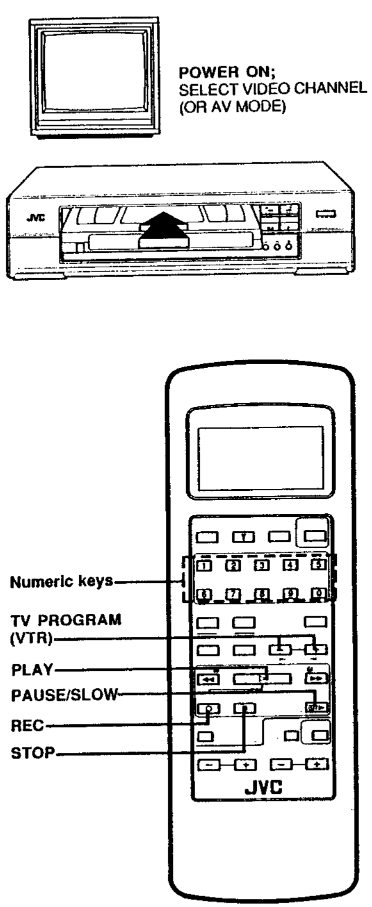
6 Press STOP/EJECT on the recorder.

NOTES:

- If the end of the tape is reached during Play or search, it is automatically rewound to the beginning and stops.
- If noise bars appear during playback, correct using manual tracking. ☞ p.18.

Recording

TV signals being received by the recorder's built-in tuner can be recorded onto a video tape. This is realtime video recording.



A LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

B CHOOSE A PROGRAMME

2 Press TV PROGRAM (VTR) or the numeric keys to select the channel you wish to record.

C TO START RECORDING

3 Press REC and PLAY simultaneously.

D TO PAUSE RECORDING

4 Press PAUSE/SLOW.
5 Press PLAY to resume recording.

E TO STOP RECORDING

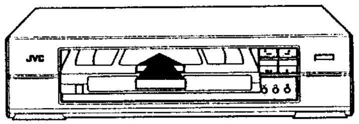
6 Press STOP.

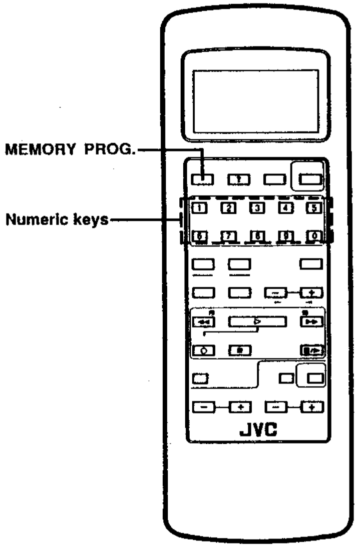
NOTES:

- To start recording with the recorder's REC/ITR button, press it once on its own. Pressing REC/ITR more than once activates the Off-Timer. ☞ p.19.
- After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.
- The recorder automatically stops when record-pause continues for more than 5 minutes.
- If the REC button does not work, check to see if the cassette's safety tab has been removed.
- When a VPS programme is being broadcast on the selected channel, "VPS" appears on the display panel. ☞ p. 23 for information on VPS.
- The channel cannot be changed while recording is in progress. To change the channel, engage the record-pause mode, then change the channel.
- The recorder automatically rewinds when the end of the tape is reached during recording.

Timer-Recording

Timer-recording is one of the most useful functions of your video recorder, and, if you don't understand it, it can be one of the most complicated too. Please read the following to get a clear idea about how to program the timer. The LCD timer programming method introduced here lets you input all necessary settings at the remote control and transfer them to your recorder at the touch of a button. To program the recorder's timer directly while viewing the FDP (display panel), ☞ p. 20.
TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.



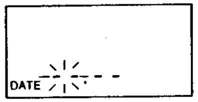


A LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

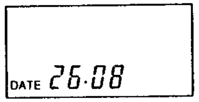
B ACCESS THE TIMER PROGRAM

2 Press MEMORY PROG.



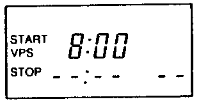
C INPUT THE DATE

3 Press the appropriate numeric keys.
- Example: For 26th August, press 2 6 0 8.



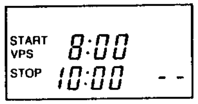
D INPUT THE START TIME

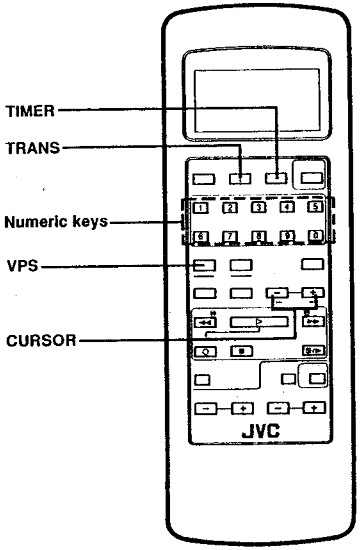
4 Press the appropriate numeric keys.
- Example: For 8:00, press 0 8 0 0.



E INPUT THE STOP TIME

5 Press the appropriate numeric keys.
- Example: For 10:00, press 1 0 0 0.



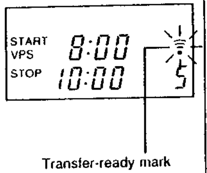


TO DISENGAGE THE TIMER

For safety, your recorder disables all other functions while in the timer mode.
- To use your recorder, first disengage the timer mode by pressing TIMER again. Now all functions will be operable.
- To re-engage the timer, press TIMER.

F INPUT THE CHANNEL NUMBER

6 Press the appropriate numeric keys.
- Example: For channel 5, press 5.
- After the channel has been entered, the transfer-ready mark will appear and blink.
- Normally, you should leave "VPS" on so you can take advantage of VPS recording*. You can cancel VPS by pressing the VPS button whenever the memory program is open. If you have any questions about VPS, ☞ p. 23.



G TRANSFER THE DATA TO THE RECORDER

7 Press TRANS with the remote control directed to the recorder's Remote Sensor window.
- You will see "P: 1" on the display panel, telling you that the data has been successfully transferred to the recorder's Program 1 memory.

H SET TO TIMER MODE

8 Press TIMER.
- The recorder will enter the timer mode and power will go off.

Variations in Step C (Weekly Program)

This function lets you set the recorder to timer-record at the same time on the same day every week. Use it to record weekly serials.
- First press numeric key "9"(WEEKLY) and then enter the date.

Variations in Step C (Daily Program)

This function lets you set the recorder to timer-record at the same time everyday. Use it to record daily serials.
- To record a daily serial starting on the day of setting, first press numeric key "8" (DAILY) and then press CURSOR → until the display changes to time input mode.
- To record a daily serial starting on a certain day, first press numeric key "8" (DAILY) and then enter the date.

TO MAKE CORRECTIONS

- During steps C – F, press either CURSOR button so that the item you want to change blinks, and enter new data.

For other timer programming methods, ☞ p.20.
Any questions? ☞ p.22.

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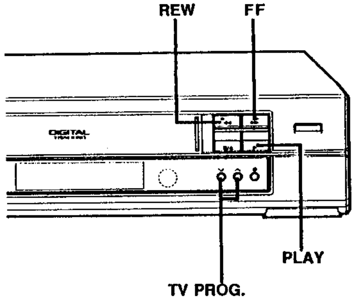
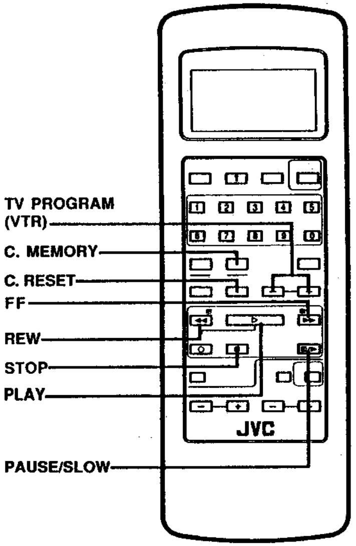
* "E" version models have no VPS capability. If your recorder is an "E" model, please disregard all references to VPS.

▶ For Playback





NOTES:

- The recorder automatically stops when still continues for more than 5 minutes.
- If the still picture is unstable, use the recorder's TV PROG. ⋀/⋁ buttons to correct the picture.
- During search playback, some noise bars will appear.
- There is no audio during search, slow, still, or frame-by-frame playback.
- When a new tape is inserted, the recorder enters the automatic tracking mode automatically.

High-Speed Forward And Reverse Search

During Playback:

1. Press FF for high-speed forward search.
2. Press REW for high-speed reverse search.
3. Press PLAY to resume normal playback.
   - For short searches, keep FF or REW pressed for more than 2 seconds. When released, normal playback will continue.

Still Playback And Frame Advance

During Playback:

1. Press PAUSE/SLOW to view a still picture.
2. Press again to advance the picture frame by frame.
3. Press PLAY to resume normal playback.

Slow Motion

You can view pictures in slow motion in the forward direction using the PAUSE/SLOW button.

During Playback:

1. Press PAUSE/SLOW for two seconds. Tape will play back in slow motion.
   - Press PLAY to resume normal playback.

Manual Tracking

Your video recorder is equipped with automatic tracking control. If you wish to adjust tracking manually, you can override this function.

During Playback:

1. Press the recorder's TV PROG. ⋀/⋁ buttons simultaneously to cancel auto tracking.
2. Press TV PROG. ⋀ or ⋁ to adjust tracking.
   - Press TV PROG. ⋀/⋁ simultaneously to return to automatic tracking.

During Slow:

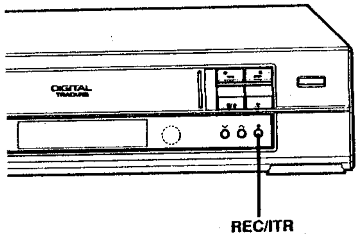
1. Simply press TV PROG. ⋀ or ⋁ to adjust tracking.

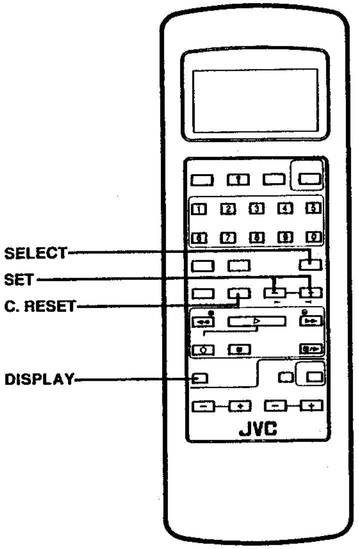
Counter Memory

During Play:

1. Press C. RESET at a point you wish to locate later.
   - The counter will read "0:00:00".
2. Press C. MEMORY.
   - The "M" indicator will light on the display panel.
3. When you wish to return to that point, press STOP and then REW.
   - The tape will rewind and stop at about "0:00:00" automatically.
4. To cancel the Counter Memory mode, press C. MEMORY again.

● For Recording





To Watch Another Programme While Recording

During Record:

1. Use the channel controls on the TV to select the other channel you wish to view.
   - The programme selected with the TV's channel controls will appear on the TV screen while the one selected with the video recorder's channel controls will be recorded on the tape.

Instant Timer Recording (Off Timer)

You can start a recording and then set the recorder to shut off automatically after a set duration.

During Record:

1. Press REC/ITR. "ITR" and "0:30" indications appear, advising that power will switch off after 30 minutes.
2. Press REC/ITR again to delay the off-time by 30-minute increments (up to 4 hours).
   - For more precise setting, use the remote control's SELECT and SET buttons to set the exact time required (possible up to 4 hours and 59 minutes).

Elapsed Recording Time Indication

When you need to know the exact time of a recording.

1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET before starting recording or playback.
   - The counter will be reset to "0:00:00" and show the exact elapsed time as the tape runs.

Display Button

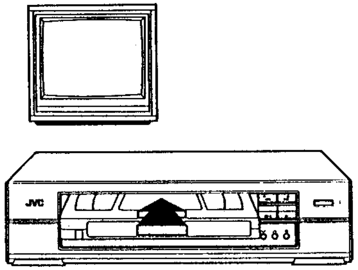
When you wish to check the time, date, or channel number during recording. (The counter reading is normally displayed during recording.)

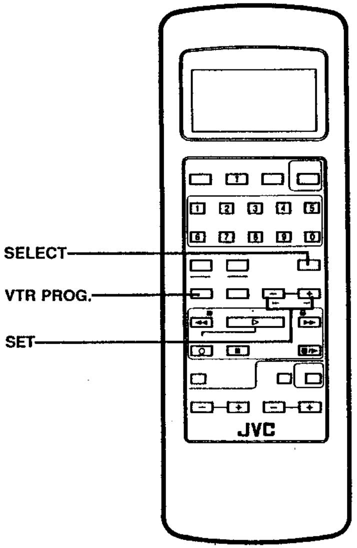
1. Press DISPLAY to display the current clock time.
2. Press DISPLAY again to display the current date.
3. Press DISPLAY again to display the channel number.

NOTE:

- The DISPLAY button rotates between channel, tape counter, clock time, and date.

For Timer Recording





Direct FDP Timer Programming

The built-in 1-year/8-event programmable timer can be set with the remote control while referring to the recorder's display panel. Make sure that the display panel shows the correct current time.

A LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

B ACCESS THE TIMER PROGRAM

2 Press VTR PROG.
- You are ready to input data into Program No. 1.
- To change the program number, press SET.

P : 1

C INPUT THE DATE

3 Press SELECT, and then SET to set the day.
4 Press SELECT, and then SET to set the month.

25. 12.

D INPUT THE START TIME

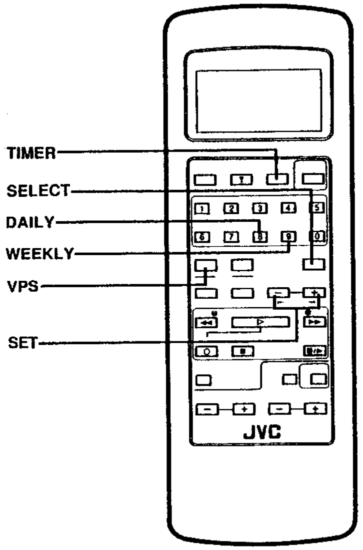
5 Press SELECT, and then SET to set the hour.
6 Press SELECT, and then SET to set the minute.

START 12:30

E INPUT THE STOP TIME

7 Repeat 5 and 6.

STOP 13:30



F INPUT THE CHANNEL NUMBER

8 Press SELECT, and then SET to set the channel.

Ch 8

- Normally, you should leave "VPS" on so you can take advantage of VPS recording*. You can cancel VPS by pressing the VPS button whenever the memory program is open (except when the program number is displayed). If you have any questions about VPS, ☞ p. 23.

G END ONE PROGRAM

9 Press SELECT.

P : 1

- The current program number will appear and blink.
- To make corrections, advance with SELECT to the item you wish to change and input new data with SET.
- If you need to set another program, press SET and repeat steps 3 through 9.

H SET TO TIMER MODE

10 Press TIMER.
- The recorder will enter the timer mode and power will go off.
- To release the timer mode, press TIMER again.

Variations (Weekly Program)

This function lets you set the recorder to timer-record at the same time on the same day every week. Use it to record weekly serials.
- Press WEEKLY whenever the memory program is open (except when the program number is displayed).
  The "W" indicator will light.

■ 25. 12.

Variations (Daily Program)

This function lets you set the recorder to timer-record at the same time everyday. Use it to record daily serials.
- Press DAILY whenever the memory program is open (except when the program number is displayed).
  The "D" indicator will light.

■ 25. 12.

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*"E" version models have no VPS capability. If your recorder is an "E" model, please disregard all references to VPS.

For Timer-Recording (cont'd)

Error Indications

The following error indications may appear on the recorder when you press the TIMER button to engage the timer mode. Here's why, and what you should do.

INDICATION	WHY	WHAT TO DO
"TIMER" and "📼" on the display panel continue blinking.	There is no cassette in the recorder.	Insert a cassette.
The cassette is automatically ejected. "TIMER" and "📼" continue blinking.	The inserted cassette has its safety tab removed.	Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and re-insert it. ☞p.9.
"TIMER" blinks for 10 seconds and the timer mode is cancelled.	There are no preset programs in memory, or they have all been incorrectly preset.	Check the programmed data and re-program it as necessary. Press TIMER again.

Other Indications

INDICATION	WHY
"TIMER" steady lit (with clock display).	The recorder is in the timer mode. This is the normal display you should see when you press the TIMER button.
"REC" and "TIMER" steady lit.	Normal display while timer-recording is in progress.
The cassette is ejected, power is shut off and "TIMER" and "📼" are blinking.	This means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.
"0:00" is blinking.	This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet. To set the clock. ☞ p.11. If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.

On Checking And Cancelling Programs

Since executed programs are automatically cleared from memory (except those for daily and weekly serials), cases where the entire 8-event memory is full should be rare. If this should happen, check the preset programs and cancel one or more to make room for the new program(s) you wish to input.

TO CANCEL A PROGRAM

1. Press VTR PROG.
   - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. Press VTR CANCEL to erase the program from memory.
   - You can press VTR CANCEL at any stage while the program is open. The erased program number will be displayed with the number blinking.
   - To erase another program, press SET when a blinking program number is displayed.

Some Facts On Timer Operation

- When timer-recording is successfully completed, the recorder's power is automatically switched off.
- Since the timer starts and stops recording based on the time being kept by your video recorder's built-in clock, the clock's time must be accurate for correct timer-recording results.

VPS Recording ("EG" Version Only)

Now available from some TV stations, VPS (Video Program System) is a service designed to assure safe, accurate timer recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed. If your video recorder is an "EG" model, a built-in VPS decoder is provided so you can take advantage of this service. If your recorder is an "E" model, VPS recording is not possible. The following applies to "EG" models only.

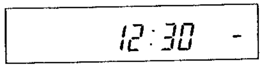
TO USE VPS SERVICE

- For each timer program, the initial setting is "VPS ON" and you will see "VPS" on the display panel. You do not have to cancel "VPS" even for non-VPS programmes, because those programmes will be recorded at the preset times.
- To cancel "VPS", press the VPS button. Pressing the VPS button alternates the setting, and the "VPS" indicator will go out.

Locking The Recorder's Controls

To avoid unwanted operation and prevent accidental recording or other interference, use the Child Lock function.

1. Press the remote control's OPERATE button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   - The Child Lock indicator (–) will appear on the display panel.

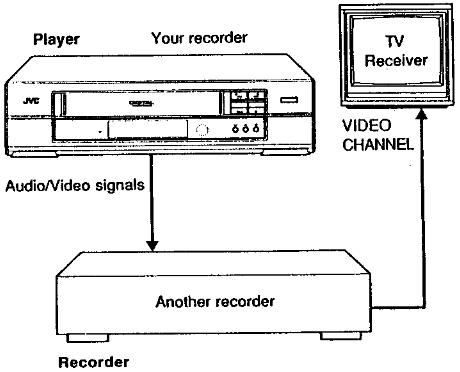


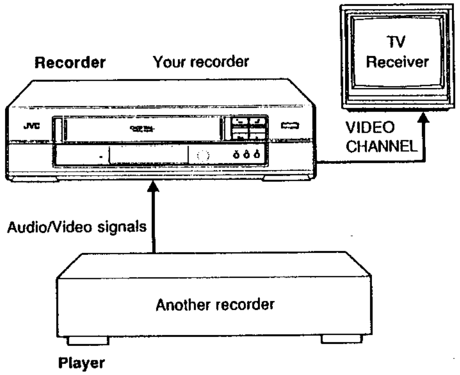
2. Child Lock is automatically deactivated when you switch the recorder's power on again with the remote's OPERATE button.
   - Pressing the TIMER button during timer-recording also deactivates the Child Lock mode.

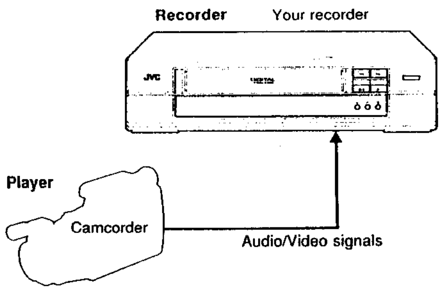
NOTES:

- While the Child Lock mode is engaged, make sure you keep your remote control in a safe place inaccessible to children.
- Timer-recording is possible in the Child Lock mode. After timer-recording has been performed, the Child Lock mode remains in effect.

For Editing


Player
Your recorder
TV Receiver
VIDEO CHANNEL
Audio/Video signals
Another recorder
Recorder


Recorder
Your recorder
TV Receiver
VIDEO CHANNEL
Audio/Video signals
Another recorder
Player


Recorder
Your recorder
Player
Camcorder
Audio/Video signals

Editing To/From Another Video Recorder

Your video recorder can be used as either the recording deck or the source player when editing tapes.

PREPARATION

1. Connect the player's AUDIO/VIDEO connector to the recorder's AUDIO/VIDEO connector.

OPERATION

2. Set the recorder's input mode to AUX.
   - With this recorder, press the numeric key "0". "AU" will appear instead of a channel number.
3. Put the player in the Play mode.
4. Put the recorder in the Record mode.

NOTE:

Suitable leads can be obtained from your dealer.

Editing From A Camcorder

Tape-to-tape editing is also possible using a camcorder (equipped with playback facility) as the player and your deck as the recorder.

PREPARATION

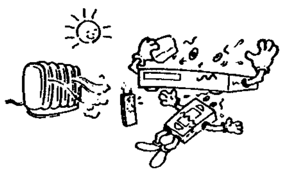
1. Connect the camcorder's AV OUT connector to the recorder's AUDIO/VIDEO connector.
   - If the camcorder's AV output cable includes a mini-plug, leave it unconnected.

OPERATION

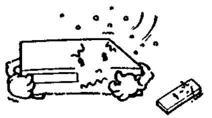
2. Set the recorder's input mode to AUX by pressing numeric key "0". "AU" will appear instead of a channel number.
3. Put the camcorder in the Play mode.
4. Put the recorder in the Record mode.

Precautions

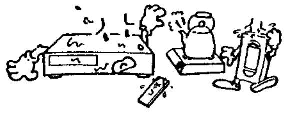
Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.



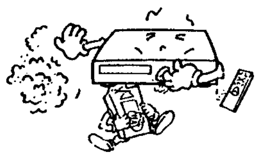
Avoid extreme heat and direct sunlight



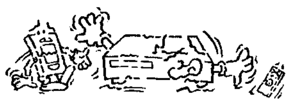
Avoid extreme cold



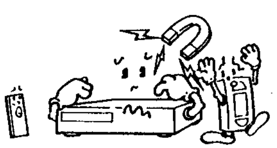
Avoid extreme humidity



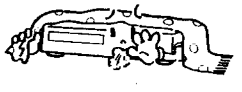
Avoid dust



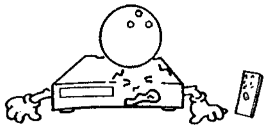
Avoid places subject to vibrations



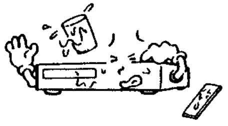
Avoid strong magnetic fields



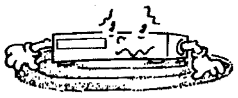
Do not block the recorder's ventilation openings



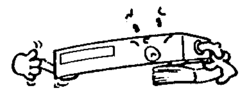
Do not place anything heavy on the recorder or remote control



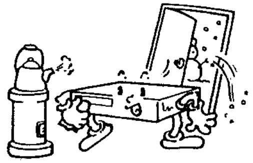
Do not place anything which might spill on top of the recorder or remote control



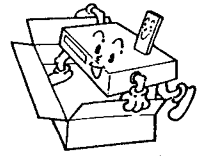
Do not place the recorder on cushions, pillows, or thick carpeting



Use the recorder in a stable, horizontal position only

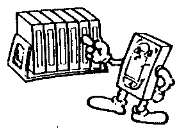


Beware of moisture condensation
Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.



When transporting

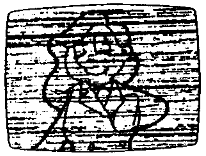
- Be sure to remove cassette from recorder before packing.
- Avoid violent shocks to the recorder during packing and transport



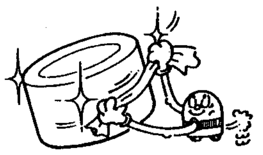
Place cassettes in cassette cases and store vertically

Special Note On Head Cleaning

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Although this model is equipped with a built-in head cleaner which automatically cleans the heads, reducing the likelihood of dirty heads, if such troubles are encountered please consult the nearest JVC dealer.



Auto Head Cleaner



A built-in head cleaner automatically cleans the video heads and head drum whenever a tape is loaded or unloaded to reduce head clogging.

In Case Of Difficulties

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	■ Is the power cord disconnected? — Connect it.
Clock is functioning properly, but the recorder cannot be powered.	■ Is "TIMER" displayed on the display panel? — Press the TIMER button to extinguish the display.
Tape does not run during recording.	■ Is the PAUSE/SLOW button engaged? — Press the PLAY button.
Tape stops during rewind or fast-forward.	■ Is the C. MEMORY button pressed? — Press again to make "M" disappear from the display panel.
Tape will not rewind or fast-forward.	■ Is the tape already fully rewound or fast-forwarded? — Check the cassette.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	■ Is a cassette loaded? ■ Is the safety tab on the cassette removed? — Reseal the slot with adhesive tape.
TV broadcasts cannot be recorded.	■ Has "AU" been selected? — Set to the desired channel.
Tape-to-tape editing is not possible.	■ Is the camcorder or another video recorder correctly connected? ■ Are all necessary power switches turned ON? ■ Has "AU" been selected? — Set to "AU".
Camera recording is not possible.	■ Is the camcorder correctly connected? ■ Has "AU" been selected? — Set to "AU".
Timer recording is not possible.	■ Have you set the clock correctly and programmed the timer correctly? — Check once again. ■ Is "TIMER" displayed on the display panel? — If not, press the TIMER button to display "TIMER".

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	■ If you are using RF OUT connection, is the TV receiver's channel selector set to the correct video channel? — Set it to the RF converter channel (UHF 36). (☞ p.8) ■ If you are using AV connection, is the TV receiver set to the AV mode? — Set it to the AV mode.
Noise appears during visual search.	■ This is normal.
Noise appears during normal playback.	■ Is the automatic tracking mode engaged? — Try manual tracking. (☞ p.18)
Noise appears during slow playback.	■ Is the automatic tracking mode engaged? — Try manual tracking. (☞ p.18)
Playback picture is blurred or interrupted while TV broadcasts are clear.	■ Video heads may be dirty. — Head cleaning is necessary. Consult your JVC dealer. (☞ p.26)

OTHERS

Symptoms	Check points
Whistling or howling is heard from TV during camera recording.	■ Move VideoMovie or camera's microphone away from TV or reduce TV sound volume.
Clock setting is not possible.	■ Is "TIMER" displayed on the display panel? — Press the TIMER button to extinguish the display.
Some channels are skipped over when scanning channels.	■ Those channels are preset to be skipped over. If you need them, restore them. (☞p.12)
Channel cannot be switched.	■ Is recording in progress? — Press the PAUSE/SLOW button, change the channel, and press the PLAY button.
Remote control does not function.	■ Are the batteries discharged? — Replace with new ones.

ATTENTION:
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

SECTION 1
DISASSEMBLY AND MECHANISM ADJUSTMENTS

1.1 DISASSEMBLY

1.1.1 Top cover

1. Refer to Fig. 1-1-1 and set for the EJECT (Stop) mode and disconnect VCR from AC power.
2. Take out 5 screws Ⓐ. To remove the top cover, slide in direction of arrow and lift it away.

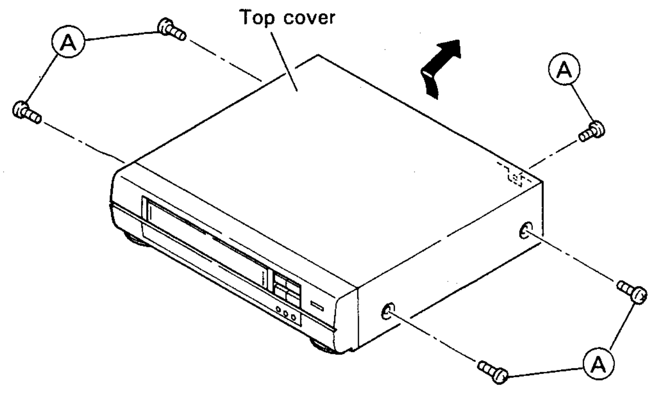


Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 3 tabs Ⓑ of the front panel assembly from the upper side of the chassis.
3. Refer to Fig. 1-1-2 and pull the front panel assembly forward you to disengage 3 tabs Ⓒ of the front panel assembly from the bottom side of the chassis, then remove the front panel assembly.

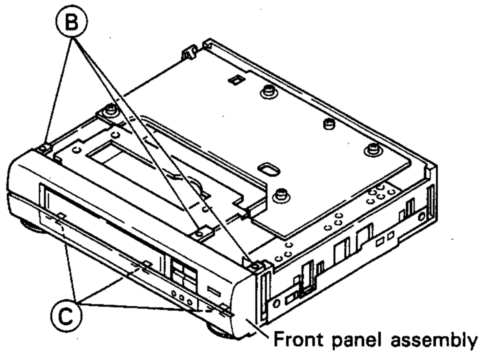


Fig. 1-1-2 Front panel assy

1.1.3 Bottom cover

1. Remove the top cover.
2. Refer to Fig. 1-1-3 and take out 3 screws Ⓓ and dosemgage 7 screw Ⓔ from the bottom of the chassis.
3. Disengage the bottom cover from the bottom of the chassis slide indirection of arrow and disengage 2 tabs Ⓕ.

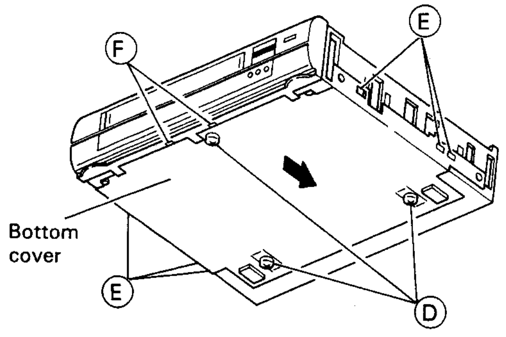


Fig. 1-1-3 Bottom cover

1.1.4 Main board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-4 and take out 4 screws Ⓖ and 1 claw Ⓗ from main board assembly.
3. Remove the main board assembly in the upward direction.

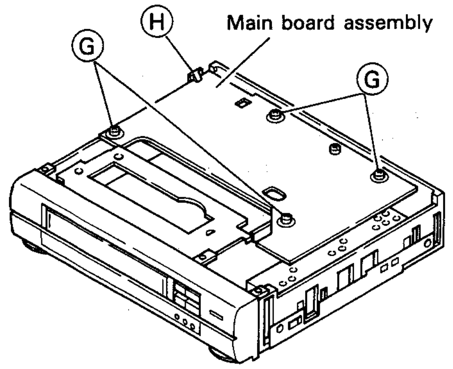


Fig. 1-1-4 Main board assy

1.1.5 Cassette housing

1. Remove the top cover and main board assembly.
2. Refer to Figs. 1-1-5 and 1-1-6.
   Take out 4 screws Ⓙ that secure the cassette housing. Disengage 3 tabs Ⓚ of the front panel and pull the front panel forward where it does not interfere with removing the cassette housing.
3. Remove the cassette housing in the upward direction.

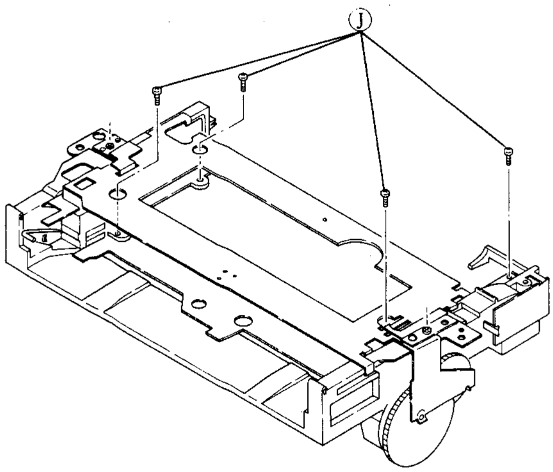


Fig. 1-1-5 Cassette housing

4. Pre/Rec board assembly
   1) Remove the top cover and main board assembly.
   2) Refer to Fig. 1-1-6 take out 2 screws Ⓛ and remove the drum shield.

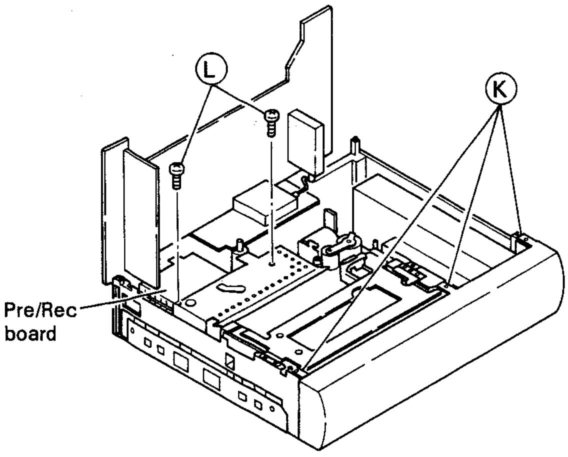

Ⓛ
Ⓚ
Pre/Rec board

Fig. 1-1-6 Pre/Rec board assy

1.1.6 Cassette housing installation

Note: ***Observe the mechanical phase and position (see figure) when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.***

1. Check that the marks of the control cam and pinch roller cam are aligned. If necessary, turn the worm clutch by hand to adjust the position.

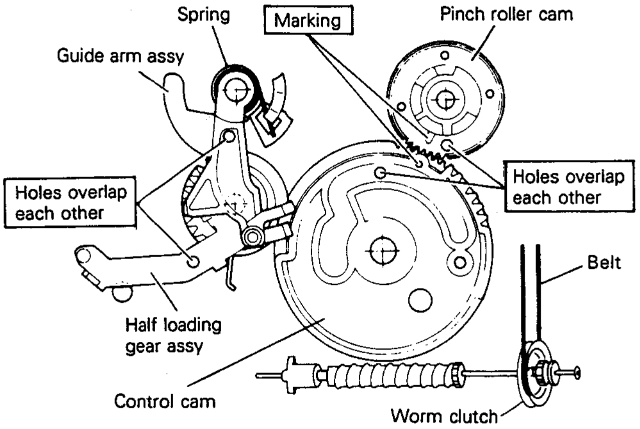

Spring
Marking
Pinch roller cam
Guide arm assy
Holes overlap each other
Holes overlap each other
Belt
Half loading gear assy
Control cam
Worm clutch

Fig. 1-1-7 Cassette housing installation

2. Confirm that the clutch of the worm clutch assembly is locked. If necessary, engage the locked.

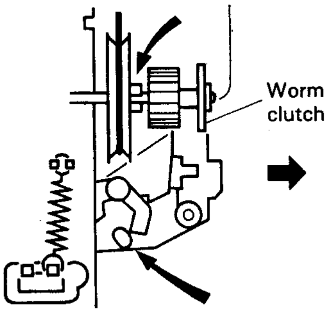

Worm clutch

Fig. 1-1-8(a) Not locked

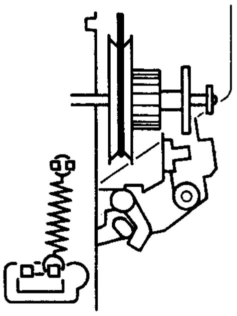


Fig. 1-1-8(b) Lock engaged

3. Install the front panel as shown in Fig. 1-1-9 and reengage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

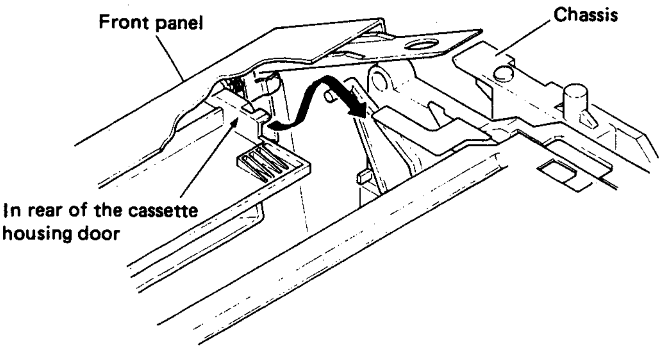

Front panel
Chassis
In rear of the cassette housing door

Fig. 1-1-9 Cassette housing door

1.1.7 Cassette housing door

1. Remove the top cover and front panel assembly.
2. Refer to Fig. 1-1-10, with a lift of cassette housing door by hand, bend center of the cassette housing door toward you, then pull out the left end from the cassette housing.
3. Refer to Fig. 1-1-10 and use care regarding the torsion spring, then pull out the right end of the cassette housing door to move it.

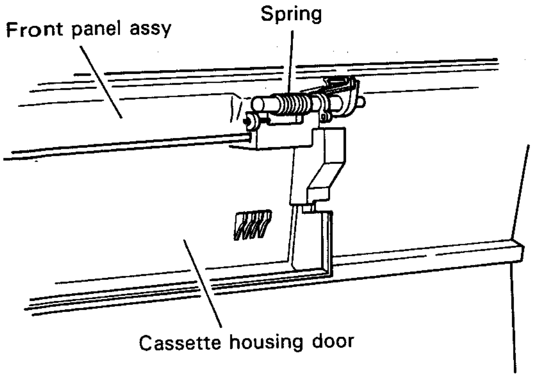


Fig. 1-1-10 Cassette housing door

1.1.8 Main-deck

1. Remove the top cover, front panel assembly and main board assembly.
2. Refer to Fig. 1-1-11 and take out 3 screws Ⓜ from the main-deck assembly.
3. Remove the main-deck assembly in the upward direction and disconnect a connector CN1 from the DECK TERMINAL board, connectors CN501, CN503 from the Pre/Rec board, connector CN1 from the A/C head board, connector CN1 from the Loading MDA board and connector CN1 from the Drum MDA board.

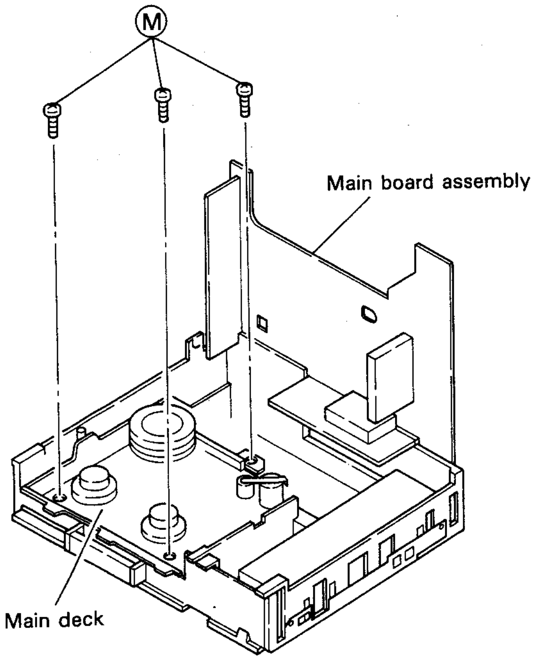


Fig. 1-1-11 Main deck

1.1.9 Switching regulator board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-12 and take out 2 screws Ⓝ from the switching regulator board assembly.
3. Remove the switching regulator board assembly in the upward direction.

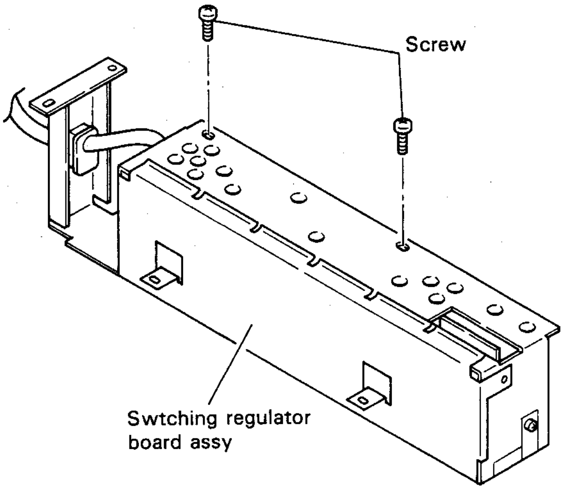


Fig. 1-1-12 Switching regulator

1.2 MECHANISM ADJUSTMENTS

1.2.1 Precautions

1. Disconnect mainframe from AC power before soldering.
2. Avoid imparting stress to wires when disengaging connectors.
3. Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4. Use care not to damage tabs, claws, etc. during repairs.
5. Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6. When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.

1.2.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1. Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2. Connect pins 2 and 3 of Main board connector CN601. (MECHACON SECTION)
3. Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

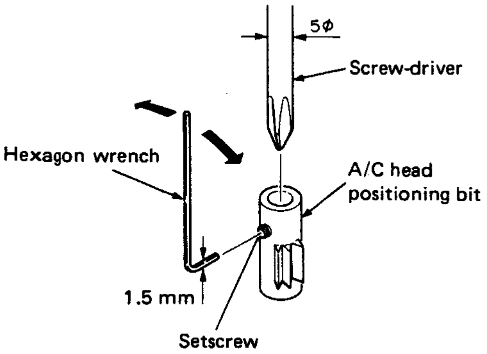


Fig. 1-2-1 A/C head positioning tool

1.2.3 Manually removing cassette tape

In event of electrical system failure that prevents the tape from being unloaded, the tape can be removed manually by the following procedure. Refer to Figs. 1-3-1, 1-3-2 and 1-3-3.

1. Disconnect power cord from AC outlet.
2. Turn the loading motor by hand so that the control cam rotates clockwise. This retracts the pole base assembly to the unloading position.
3. Continue turning to where the guide arm and half loading gear assemblies shift to beneath the cassette.
4. Turn the clutch assembly at the rear of the deck to absorb slack tape within the cassette.
5. Again turn the loading motor in the same direction to raise the cassette and remove it.

1.2.4 Test equipment

The following special tools and fixtures are required for mechanism adjustment.

1. Alignment tapes: MH-2
   Stairstep signal is employed for interchangeability checks and adjustments.
2. Torque gauge : PUJ48075-2
   Measures tape take-up torque.
3. Back tension cassette gauge : PUJ48076-2
   Measures tape tension at the supply side.
4. A/C head positioning bit : PTU94010
   - Shifts the head base for adjusting the control head position.
   - **The installation of a A/C head positioning bit on the screw-driver.**
   Refer to Fig. 1-2-1. Set screw-driver into the A/C head positioning bit where it does not interfere with adjusting the A/C head adjusting boss (position the screw-driver point 6 ± 2 mm from point of the A/C head positioning bit). Slightly tighten the setscrew by hexagon-wrench (1.5 mm).
5. Roller driver : PTU94002
   Turns the guide roller for adjusting FM linearity.

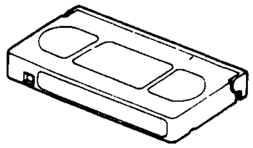
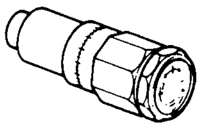
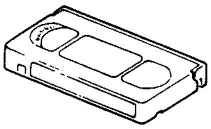
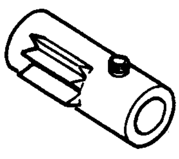
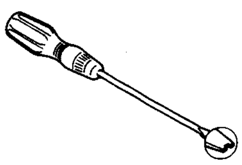
Alignment tapes 1	Torque gauge 2	Back tension cassette gauge 3	A/C head positioning bit 4	Roller driver 5
				

Fig. 1-2-2 Test equipment

1.3 MAIN MECHANISM PARTS

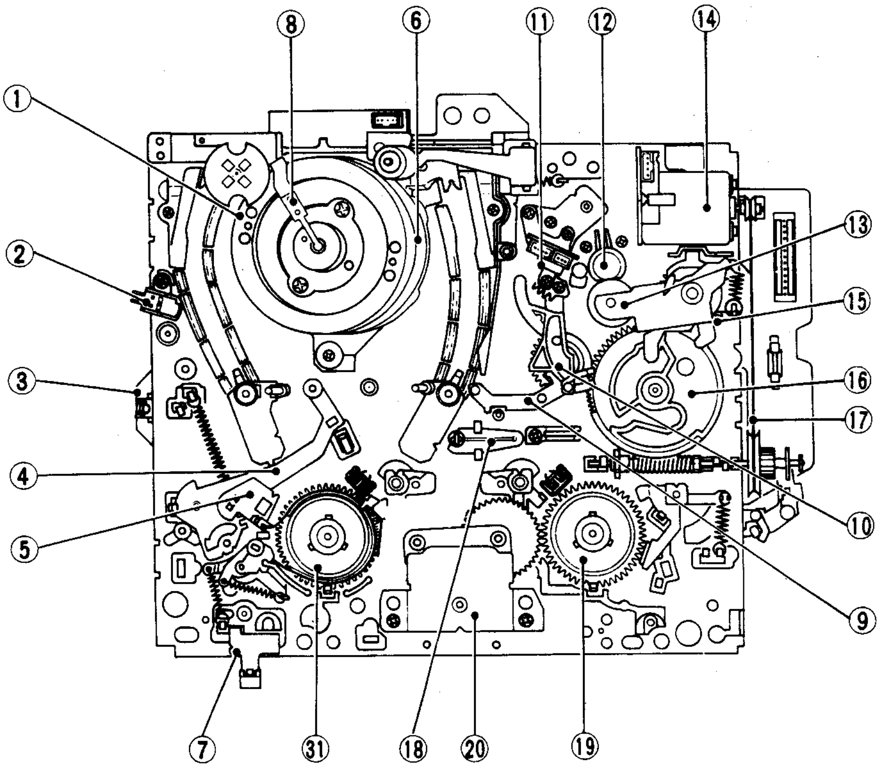

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Fig. 1-3-1 Top view of main-deck

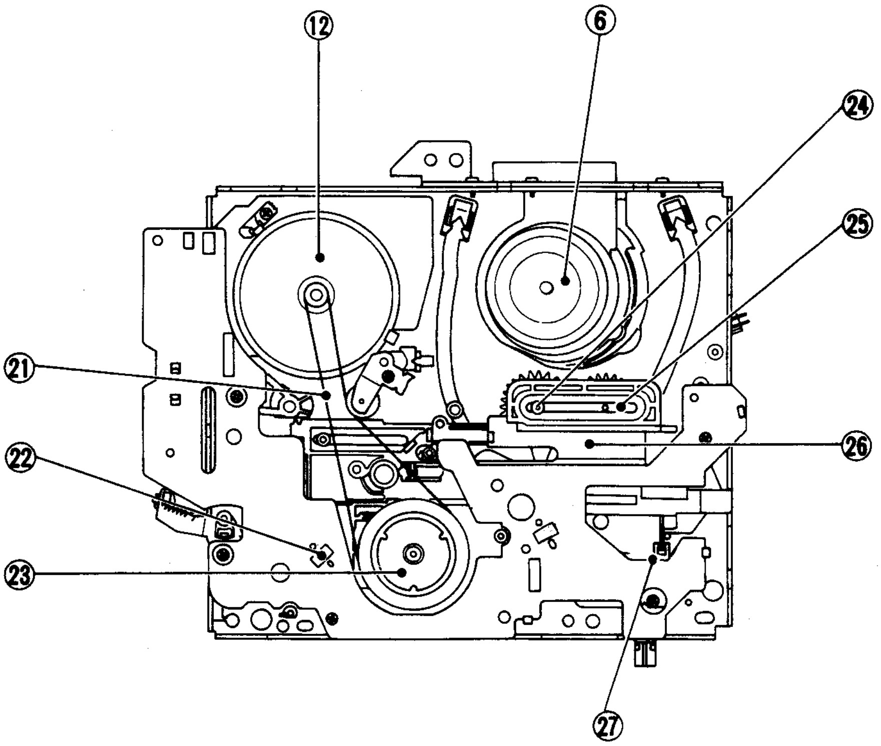


Fig. 1-3-2 Bottom view of main-deck

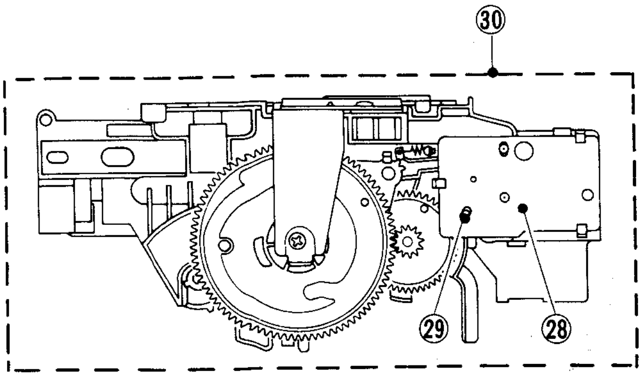


Fig. 1-3-3 Side view of cassette housing

A. Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

B. Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).

For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.

Before oiling, clean with alcohol.
Apply one or two drops of oil. Avoid excess oil.

1. Table 1-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 1-1

2. Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: ***Stir grease that has been stored for an extended period.***

C. Main mechanical parts

See Fig.s 1-3-1, 1-3-2 and 1-3-3.

No.	Symbol	Parts Name	See Section
1	M32A	Upper drum assy	1.5.1
2	M44	Full erase head	
3	51Q1	End sensor	
4	M41	Tension arm assy	1.5.4
5	M42	Tension band assy	1.5.4
6	M32C	Lower drum motor assy	1.5.2
7	M461	REC safety switch	
8	M32D	Brush assy	
9	M449	Half loading gear assy	1.5.5
10	M447	Guide arm assy	1.5.5
11	M48	A/C head	1.5.3
12	M422	Capstan motor	
13	M442	Pinch roller arm assy	
14	M434	Loading (Mode) motor assy	
15	M446	Pinch roller cam	1.5.5
16	M438	Control cam	1.5.5
17	M437	Loading belt	
18	M460	LED holder	
19	M430	Reel disk (take-up)	
20	M424	Idler gear unit	
21	M429	Timing belt	
22	51PS1	Take up reel sensor	
23	M426	Clutch unit	1.5.6
24	M433	Take up loading arm assy	1.5.7
25	M432	Supply loading arm assy	1.5.7
26	M439	Plate assy	1.5.7
27	M462	Slide encorder (S3)	
28	56PHS3	Cassette sensor	
29	56Q2	Start sensor	
30	M36	Cassette housing assy	
31	M470	Reel disk (supply)	

- Symbol interpretation example

M32A
Ref. No. (32A)
Exploded view symbol (M)

56 Q2
Ref. No. (Q2)
Board No. (56)

1.4 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

1.4.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.

Also note that rubber parts may deform in time, even if the set is not used.

System	No.	Parts Name	Symbol No.	Periodic servicing schedule (operation hours)							
				250	500	750	1000	1250	1500	1750	2000
Tape Transport	1	Upper drum	M32A	★	★	☆	○	○	○	○	○
	11	A/C head	M48	★	★	★	○	○	○	○	○
	13	Pinch roller	M442	★	★	★	○	○	○	○	○
	2	Full erase head	M44	★	★	★	○	○	○	○	○
	4	Tension arm	M41								
	6	Lower drum	M32C				○	○	○	○	○
	12	Capstan (shaft)	M422	★	★	★	★	★	★	★	★
	9	Half loading gear	M449								
	10	Guide arm	M447								
Drive	12	Capstan motor	M422				○	○	○	○	○
	17	Loading Belt	M437				○	○	○	○	○
	21	Timing Belt	M429				○	○	○	○	○
	19	Take-up reel disk	M430				○	○	○	○	○
	31	Supply reel disk	M470				○	○	○	○	○
	23	Clutch assy	M426								○
	14	Loading motor	M434				○	○	○	○	○
		Worm clutch assy	M436								△
	26	Plate assy	M439								△
Others	5	Tension band	M42				○				○
	8	Brush	M32D				○				○

★ : Cleaning

☆ : Cleaning (or Replacement if necessary)

△ : Lubrication

No: Refer to Main mechanical parts

▲ : Lubrication (or Replacement if necessary)

○ : Inspection or Replacement if necessary

Table 1-4-1 Approximate maintenance schedule

1.5 MAIN PARTS REMOVAL AND REPLACEMENT

<table>
<tr><th>No.</th><th>Item</th><th>Checkpoints</th><th>Adjustment and Checks</th></tr>
<tr><td rowspan="4">1</td><td rowspan="4">Upper drum assembly
•Symptoms: FM signal absent, intermittent or weak on one channel; large difference in channel output levels
•Cause: Worn or damaged video heads, poor response, etc.

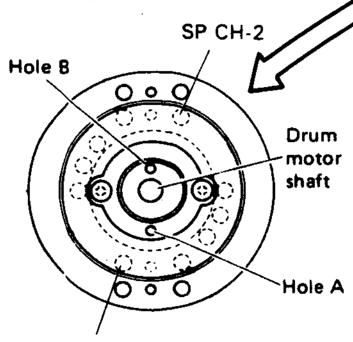
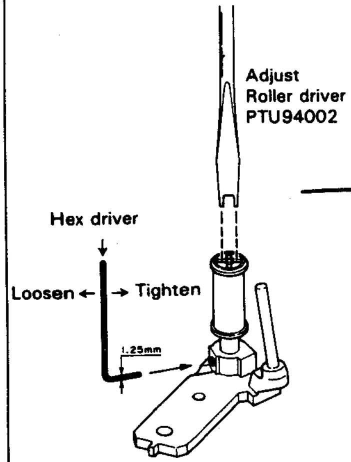
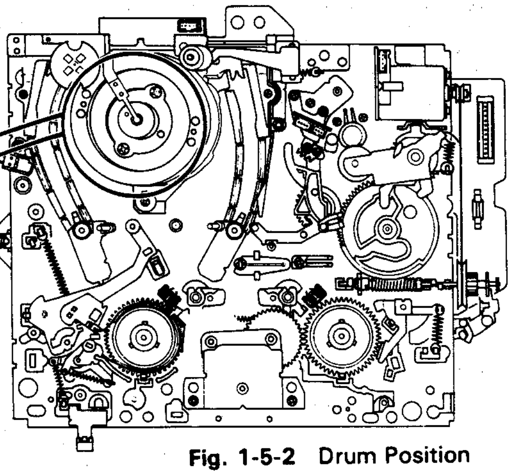



Fig. 1-5-1
Drum top view


Adjust Roller driver PTU94002
Hex driver
Loosen
Tighten
1.25mm

Fig. 1-5-4 S.T. Pole base</td><td colspan="2">
Fig. 1-5-2 Drum Position</td></tr>
<tr><td>Mounting direction
See Fig. 1-5-1.
(Symptom: no picture)</td><td>After replacing, observe that upper drum hole A is opposite the motor axis from lower drum hole B.</td></tr>
<tr><td>Axis wobble
See Fig. 1-5-2.
(Symptom: jitter, poor FM linearity)
PB FM: Main board TP206
DRUM FF: Main board TP411</td><td>Record and playback.
Confirm absence of large difference between channels. (Fig. 1-5-3)

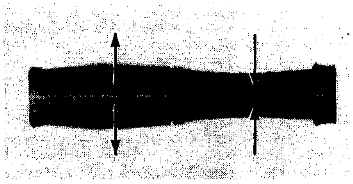



Fig. 1-5-3 Axis wobble</td></tr>
<tr><td>FM linearity check
See Fig. 1-5-5.
(Symptom: vertical sync absent, picture noise)
PB FM: Main board TP206
DRUM FF: Main board TP411

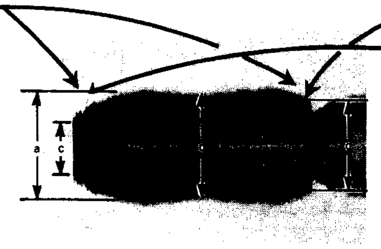
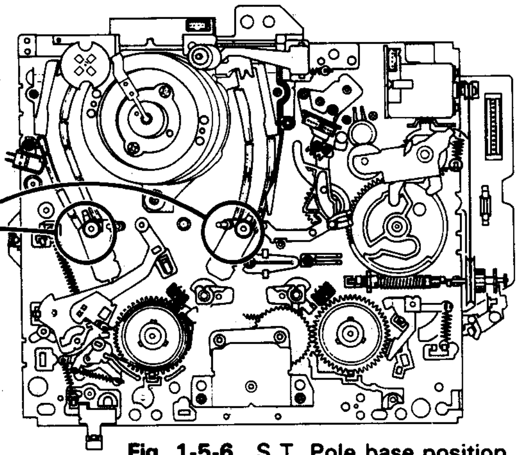
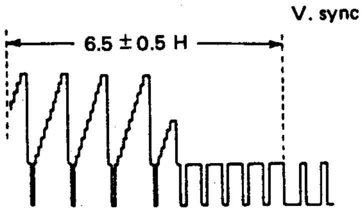
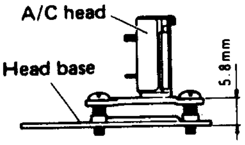
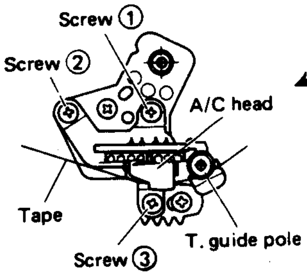
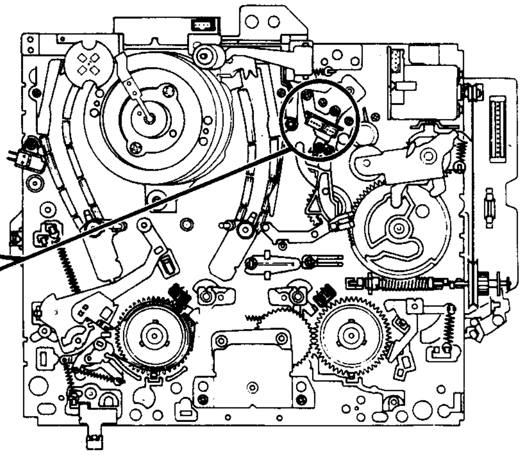
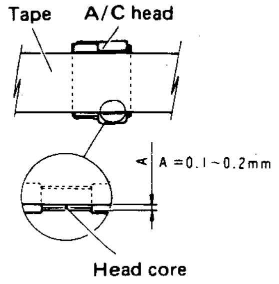
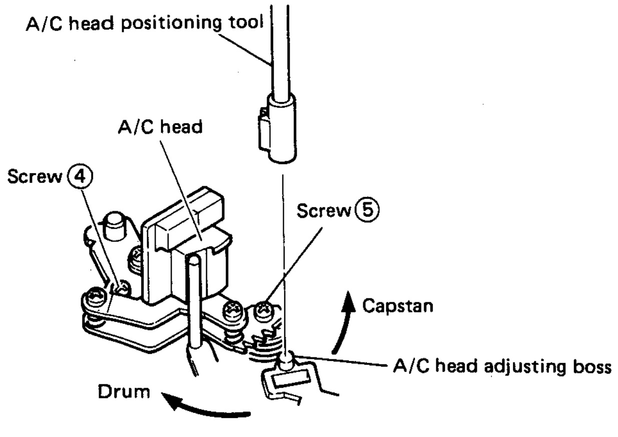
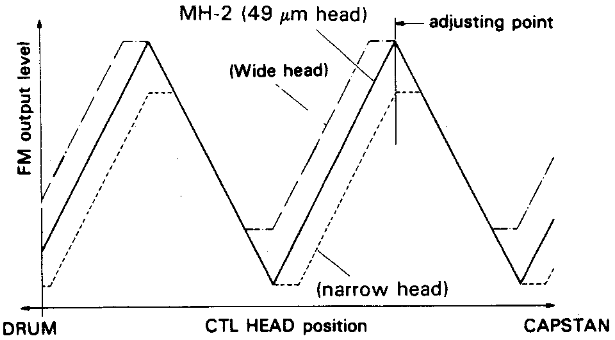
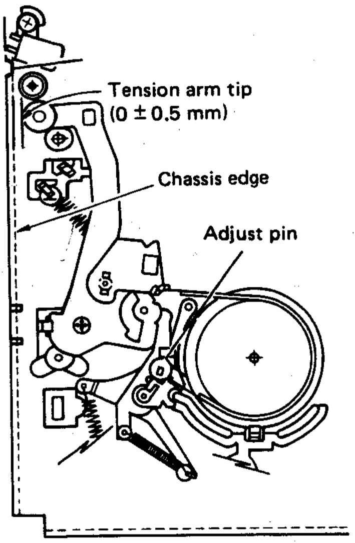
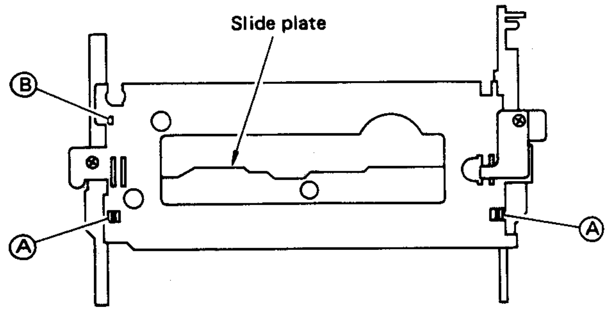
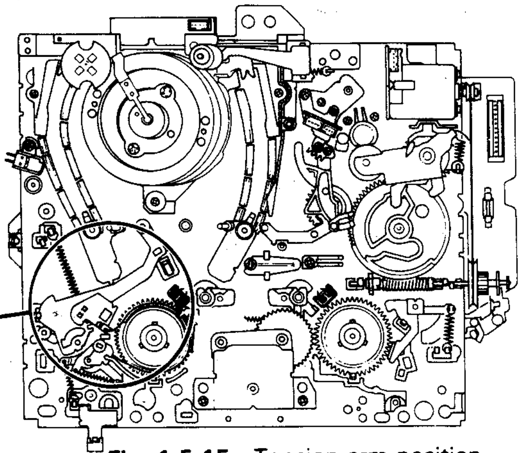



Fig. 1-5-5 FM linearity
$\frac{b}{a} \geqq 0.7$, $\frac{c}{a} \geqq 0.65$, $\frac{d}{a} \geqq 0.65$</td><td>
Fig. 1-5-6 S.T. Pole base position
1) Play stairstep signal of the MH-2 Alignment Tape. Confirm absence of obvious FM waveform loss and that operating the Tracking yields the optimum point.
2) Refer to Fig. 1-5-4, adjust for loss at the left edge (drum entry) of the FM waveform by turning the guide roller of the supply pole base. Similarly, adjust for loss at the right edge (drum exit) by turning the guide roller of the take-up pole base.
Note: *If FM loss occurs on both channels and cannot be corrected by adjusting the guide rollers, the lower drum needs replacement.*</td></tr>
</table>

No.	Item	Checkpoints	Adjustment and Checks
	PB switching point •Symptom: switching noise at picture bottom.	TP210 (VIDEO OUT)  **Fig. 1-5-7** PB Switching Point	1) Connect an oscilloscope to TP210. 2) Set the MH-2 alignment tape into the cassette housing. Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP411 (DRUM FF) of the main board. 4) Adjust R402 to position the trigger point 6.5 H ±0.5 H from V. sync as shown in Fig. 1-5-7.
2	Lower drum assembly •Symptoms: Poor FM linearity, noisy rotation, jitter •Cause: Lead and bearing wear	Check FM linearity and switching point.	See above upper drum assembly items.
		Check control head phase (X value) Symptom: tracking error PB FM: Main board TP206 DRUM FF: Main board TP411	1) Play stairstep signals of MH-2 Alignment Tape. Engage the Tracking Preset mode by pressing the "V" and "Λ" TV PROG buttons simultaneously in the onscreen mode. Confirm that the same maximum FM waveform level is obtained as when the tracking is adjusted manually. 2) Refer to the A/C head adjustments.
3	**A/C head**  **Fig. 1-5-8** Temporary height  Screw ① Screw ② A/C head Tape T. guide pole Screw ③ **Fig. 1-5-9** Inclination/Azimuth/ Height adj.		 **Fig. 1-5-10** A/C HEAD position
		Temporarily set height as indicated in Fig. 1-5-8.	Set the height as indicated in Fig. 1-5-8 to facilitate tape transport checks and adjustments.
		Tilt (forward inclination) See Fig. 1-5-9. (Symptom: audio level varies greatly.)	1) Run tape, turn screw ① counterclockwise to where slight curling of the tape occurs at the lower flange of the take-up guide roller. 2) Then slowly turn the screw clockwise to where the curling ceases.
		Azimuth See Fig. 1-5-9. (Symptoms: audio low level or noisy) Audio output: Main board AUDIO OUT	1) Play stairstep signal (with audio 6 kHz) of the MH-2 Alignment Tape. Observe audio output signal with oscilloscope. 2) Turn screw ② and adjust for maximum audio output level.

No.	Item	Checkpoints	Adjustment and Checks
	 **Fig. 1-5-11** Height Adj	Height See Fig.s 1-5-9 and 1-5-11. (Symptom: low audio and control signal levels)	1) Run tape and observe the control head area. 2) Turn screws ①, ② and ③ by small and equal amounts until 0.1 to 0.2 mm of the head core bottom can be seen. **Note:** *If difficult to observe, play stairstep signal of MH-2 Alignment Tape and adjust for maximum audio output and control pulse level.*
		FM linearity	Refer to upper drum assembly items. If adjustment is major, again check the azimuth.
	 A/C head positioning tool A/C head Screw④ Screw⑤ Capstan A/C head adjusting boss Drum **Fig. 1-5-12** CTL head phase  **Fig. 1-5-13** CTL head phase **Note:** *Trigger the oscilloscope externally signal from TP411 (DRUM FF). Use (+) trigger for MH-2 alignment tape.* *This model is used wide heads.*	Control head phase See Fig. 1-5-12 PB FM: Main board TP206 FF: Main board TP411	1) Play stairstep signal of MH-2 Alignment Tape and observe the FM waveform. Set for Tracking preset by pressing the "V" and "Λ" TV PROG buttons simultaneously in the playback mode. 2) Loosen screws ④ and⑤. Set the A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 1-5-12. 3) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 1-5-13. 4) Tighten screw ⑤ . Remove the tool and tighten screw ④.

No.	Item	Checkpoints	Adjustment and Checks
4	**Tension arm assembly** **Tension band assembly**  Tension arm tip (0 ± 0.5 mm) Chassis edge Adjust pin **Fig. 1-5-14** Tension arm assy  **Fig. 1-5-16** Cassette housing	Tension pole position See Fig. 1-5-14. (Symptom: poor FM waveform response)	 **Fig. 1-5-15** Tension arm position 1) Remove video cassette tape and set for the playback mode as following steps. 2) Disconnect VCR from AC. Slightly rotates the loading motor counterclockwise by hand, then press the lock level portion Ⓐ of the cassette housing by hand as shown in Fig. 1-5-16. 3) Move the raised portion of the cassette housing slide plate to fully forward by hand with loading motor. At this time, again press the lock level portion Ⓑ of the cassette housing slide plate to lower the cassette housing (internal holder of the cassette housing is locked in lowered position). 4) Cover the cassette LED with opaque material (insulated tape with black). 5) Connect VCR to AC. Press the power button on the Front panel and set for the playback mode. 6) Turn the eccentric adjust pin to align the edge of the chassis with the tension arm tip as shown in Fig. 1-5-14.
		Back tension **(Symptom: skew)**	**1) When the tension pole position is correctly adjusted, the back tension will assume the correct value.** **2) Use the Back Tension Cassette Gauge and set for the playback mode. Confirm reading** of 30 to 43. **3) Changing the tension pole position in order to vary the back tension will cause adverse effects elsewhere.**

No.	Item	Checkpoints	Adjustment and Checks
5	Pinch roller cam Control cam Half loading gear assembly Guide arm assembly		Set mechanism to Eject mode (internal holder of the cassette housing is locked in raised) position.

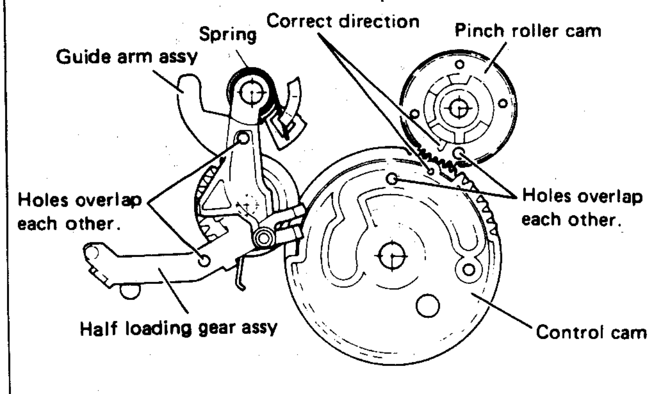


Fig. 1-5-17 Control/Pinch roller cam

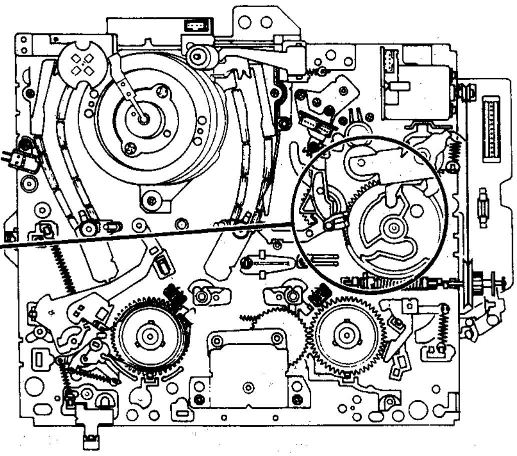


Fig. 1-5-18 Control cam position

		Important: Do not remove or disturb parts other than those mentioned. See Fig. 1-5-17.	1) When installing the pinch roller cam, overlap the largest hole of the gear portion with the hole of the deck. 2) Set the control cam on the deck with the hole of the groove overlapped with the hole of the deck. Observe that the small hole of the control cam and the ridge of the pinch roller cam are aligned. (If the control cam does not fit readily, shift the rear plate assembly within the range of play.) 3) Install the half loading gear assembly with the hole overlapped with the hole of the deck. Secure with E-ring. 4) Install the guide assembly over the spring and with the hole overlapping that of the deck. Engage the spring correctly.
		Cassette housing assembly	Install the cassette housing assembly with the mechanism in the Eject mode. Also observe that the inner holder of the housing is raised and locked.
6	Clutch assembly	Take-up torque (Symptom: inadequate take-up torque)	1) Remove cassette housing and set for playback mode (see Section 1.2). 2) Set torque gauge on the take-up reel disk. Gradually relax your grip on the gauge and read the needle indication at the point the gauge begins to rotate with the disk. Confirm indication of 60 to 100.

No.	Item	Checkpoints	Adjustment and Checks
7	Take-up loading arm assembly Supply loading arm assembly Plate assembly		Note: • *Set mechanism to the Eject or Stop mode before removing these parts.* • *The flange of the plastic rivet securing the loading arm assembly and the pole base assembly can be damaged by attempting to remove it directly. Press the loading arm assembly firmly to prevent motion. Then use a narrow-shafted tool to press the rivet from the shaft end to remove it.*
		Mounting position alignment • Remove the tension arm assembly to facilitate operation. See Fig. 1-5-19.	1) Set the supply and take-up loading arm assemblies so that the holes of the gear portions are aligned, then secure to the pole base assemblies with rivets. 2) Shift the plate assembly and install with the holes of the upper and lower components overlapped.
		Slide switch See Fig. 1-5-19.	Be sure to engage the slide switch slider with the edge of the plate assembly.

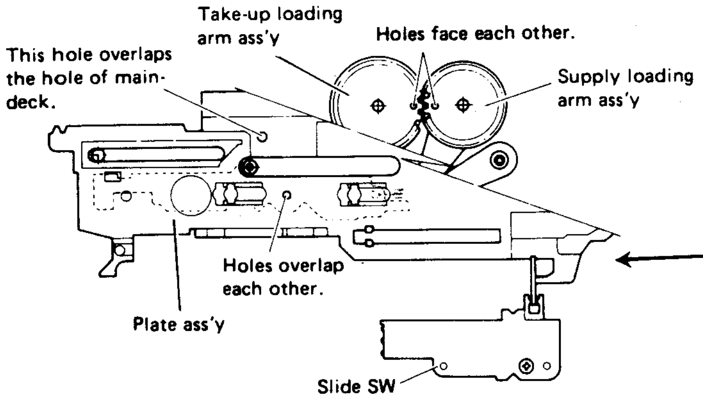

Take-up loading arm ass'y
Holes face each other.
This hole overlaps the hole of main-deck.
Supply loading arm ass'y
Holes overlap each other.
Plate ass'y
Slide SW

Fig. 1-5-19

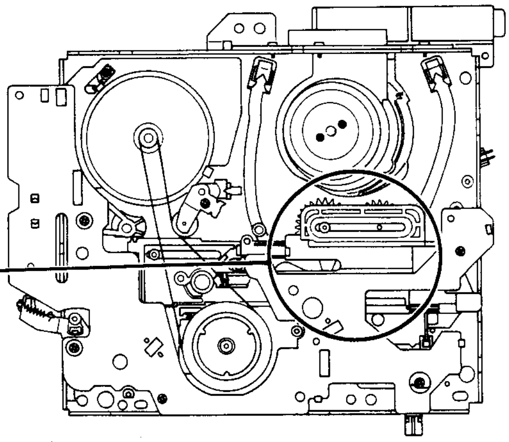


Fig. 1-5-20
T.S. Loading arm position

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope:
   wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio oscillator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: RF/IF sweep/marker
8. Signal generator: PAL color bar, stairstep, video sweeper
9. Signal generator: Audio multiplex TV signal generator
10. Recording tape
11. Alignment tape: MH-2
12. Presetting unit: PTU94008.

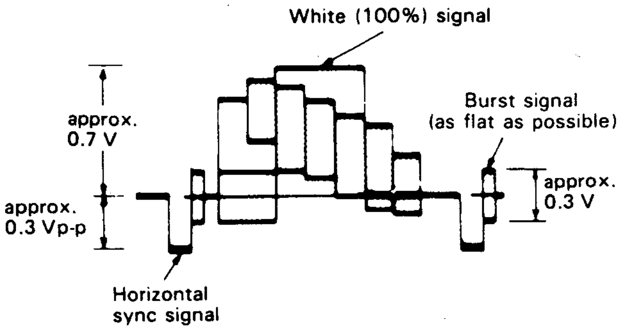

White (100%) signal
approx.
0.7 V
Burst signal
(as flat as possible)
approx.
0.3 V
approx.
0.3 Vp-p
Horizontal
sync signal

Fig. 2-1-1 Colour bar signal of pattern generator

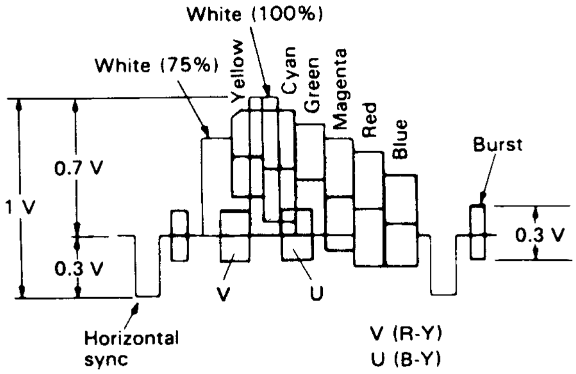

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
0.7 V
1 V
0.3 V
0.3 V
V
U
Horizontal
sync
V (R-Y)
U (B-Y)

Fig. 2-1-2 Colour bar signal waveform

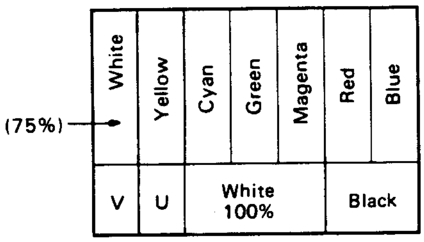

White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
V
U
White
100%
Black

Fig. 2-1-3 Colour bar pattern

2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (–) indicates check only.
Signal & Mode	• Input signal required to perform adjustment. Dash (–) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.
Color bars	Color bars signal as video input.
Stairstep	Stairstep signal as video input.
1 kHz	1 kHz sinewave as audio input signal.
MH-2 color bars	Color bars segment of MH-2 alignment tape.
MH-2 stairstep	Stairstep segment of MH-2 alignment tape.
MH-2 1 kHz	1 kHz audio signal segment of MH-2 alignment tape.
MH-2 RF sweep	RF sweep segment of MH-2 alignment tape.
E-E	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
SEARCH	Search (FWDS and REVS) playback mode
SLOW	Slow motion playback mode
STILL	Pause during playback mode
SP mode	SP recording speed
Description	This column provides an explanation of the step, notes and adjustment values.

2.2 SWITCHING REGULATOR CIRCUIT

Note: ***Unless otherwise specified, all test points and adjustments are located on the MAIN board.***

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	5V DC output voltage	• REC	•TUNER	•TP903 •TP902 (GND)	•R805	1) Connect a digital voltmeter between TP903 and TP902. 2) Record in the TUNER mode, adjust R805 for 5.3±0.05 V.

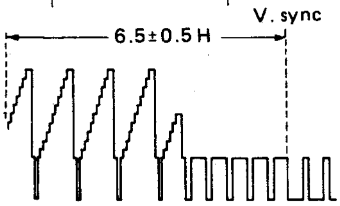
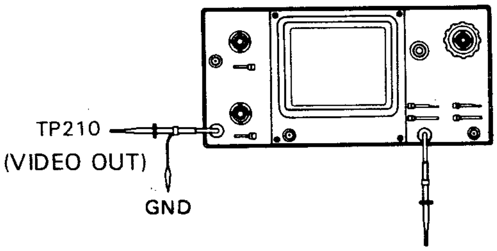
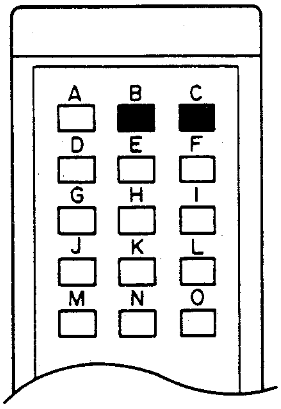
2.3 TIMER CIRCUIT

Note: ***Unless otherwise specified, all test points and adjustments are located on the T/D/S board.***

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Clock	• EE	•AUX	•IC1-42	•C6	Note: ***For below adjustments use 10:1 probe with input capacitance lessthan 100 pF.*** 1) Disconnect VCR from AC, and then connect a frequency counter between IC1-42 and GND. 2) Short IC1-34 to GND, then short the leads of capacitor C3 once in order to reset IC1. 3) Connect VCR to AC. All FDP Segments are on. 4) Adjust C6 for 2048.000±0.002 Hz (488.2808 to 488.2818 μsec).

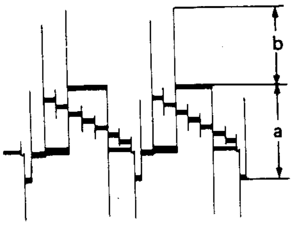
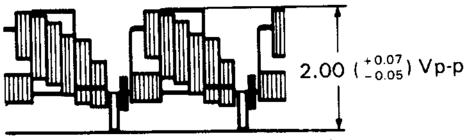
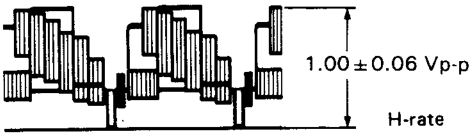
2.4 SERVO CIRCUIT

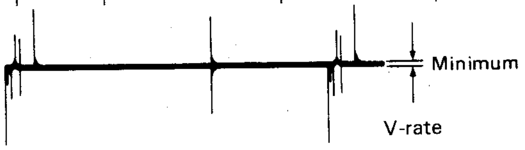
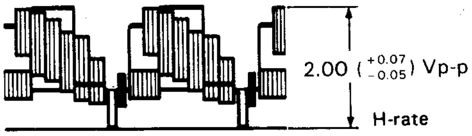
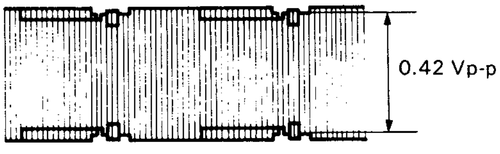
Note: *Unless otherwise specified, all test points and adjustments are located on the MAIN board.*

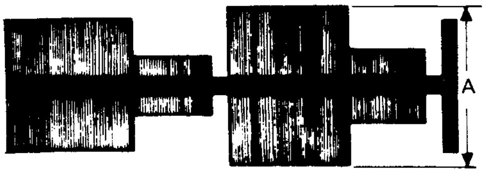
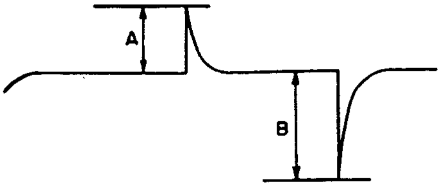
No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	PB switching point	• PB	• MH-2 stairstep • Trigger slope (−)  **Fig. 2-4-1** PB switching point	•TP210 (VIDEO OUT)	•R402	1) Connect an oscilloscope to TP210. 2) Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (− slope) with the signal from TP411. 4) Adjust R402 to position the trigger point 6.5±0.5 H from V. sync.  **Fig. 2-4-2** OSCILLOSCOPE
2	SP slow tracking	• REC then PB	• SP  A B C D E F G H I J K L M N O **Note:** *Use only button "B" and "C". Depressing other buttons during adjustments may cause adjustment errors.* **Fig. 2-4-3** Pre setting unit	•TV monitor	• Presetting unit (PTU94008)	1) Record a color signal in the SP mode. 2) Playback the recorded tape, forward and reverse direction on slow mode. Press the presetting unit "B" and "C" button to get minimum jitter during slow playback. 3) Set the unit to stop mode once time for confirmation. Then press the play button, and play back forward/reverse direction on slow mode. Confirm minimum noise bar during slow playback both direction.

2.5 VIDEO CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the VIDEO unit board.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
IMPORTANT: Item 1,2,3 and 4 1. Ordinarily avoid performing these adjustments. It should be performed only if IC1 of the VIDEO UNIT board has been replaced. 2. To adjust, replace fixed resistor with variable resistor, then adjust as required.						
1	EE level & White clip  a : b = 100 : 90 **Fig. 2-5-1** White clip	• EE	•Colour bar	•CN207-15 (Main board) •IC1-22	•R60 (EE level) •R64 (white clip) (VIDEO UNIT)	1) When IC1 of the VIDEO UNIT board is replaced, it may also be necessary to replace R60 and R64 with adjustable resistors. 2) Confirm $2.00\ (^{+0.07}_{-0.05})$ Vp-p EE level at CN207-15 and white clip of 90±4% at IC1-22. If necessary, replace R60 with NVP1301-103NU and R64 with NVP1301-332NU. 3) Supply a colour bar signal to VIDEO IN, connect one channel of a dual trace oscilloscope to CN207-15 and the other channel to IC1-22. 4) Alternately adjust R60 and R64 for $2.00\ (^{+0.07}_{-0.05})$ Vp-p at CN207-15 and white clip of 90±4% at IC1-22.  **Fig. 2-5-2** VIDEO OUT
2	Carrier & Deviation	• EE	•AUX	•CN206-9 (Main board)	•R41 (carrier) (VIDEO UNIT)	1) When IC1 of the video unit board is replaced, it may also be necessary to replaced R41 and R42 with adjustable resistors. 2) Play back a colour bar segment of MH-2 and confirm 1.00 (±0.06) Vp-p Y level at VIDEO OUT (75Ω load). If necessary, replace R41 with NVP 1301-223NU and R42 with NVP1301-103NU. 3) Without an incoming signal. Terminate VIDEO OUT with TV-monitor (75Ω load), connect a frequency counter to CN206-9 on the MAIN board. 4) Adjust R41 for 3.8±0.04 MHz. 5) Play back a colour bar segment of MH-2, and confirm 1.00 (±0.06) Vp-p at VIDEO OUT. If necessary, redplace R17 with NVP1301-222NU.
	IMPORTANT: **Ordinarily avoid performing this adjustment. It should be performed only if IC1 of the VIDEO UNIT board has been replaced or if significant waveform distortion and S/N deterioration occur during recording and playback due to deficient adjustment of the carrier set and deviation.**					
		• REC then PB	•Colour bar •AUX	•TP210 Video out (Main board)	•R42 (deviation) (VIDEO UNIT)	6) Record and play back a colour bar signal. If necessary, before recording, adjust R42 so that the Y level becomes 1.00 (±0.06) Vp-p at VIDEO OUT during playback mode.
	 **Fig. 2-5-3** Carrier and deviation					

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
3	YNR NC balance	• EE	•Colour bar •AUX  **Fig. 2-5-4** YNR NC balance	•IC1-9 (VIDEO UNIT)	•R56 (NC BAL) (VIDEO UNIT)	1) When IC1 of the video unit board is replaced, it may also be necessary to replace R56 with adjustable resistor. 2) Supply a colour bar signal to VIDEO IN, connect an oscilloscope to IC1-9 on the VIDEO UNIT board. 3) Confirm minimum DC step difference. If necessary, replace R56 with NVP1301-152NZ. 4) Adjust R56 for minimum DC step difference.
4	PB Y level	• REC then PB	•Colour bar •AUX •TP411 (DRUM FF) (Main board)  **Fig. 2-5-5** PB Y level	•CN207-15 (Main board)	•R17 (PB Y level) (VIDEO UNIT)	1) When IC1 of the video unit board is replaced, it may also be necessary to replace R17 with adjustable resistor. 2) Record and play back a colour bar signal, confirm $2.00\,(^{+0.07}_{-0.05})$ Vp-p Y level at CN207-15. If necessary, replace R17 with NVP1301-222NU. 3) Connect oscilloscope to CN207-15. 4) Record and play back a colour bar signal, adjust R17 for $2.00\,(^{+0.07}_{-0.05})$ Vp-p at CN207-15.
5	REC FM level	• REC	•Colour bar  **Fig. 2-5-6** REC FM level	•IC501-9 (Pre/Rec board)	•R246 (REC FM ADJ) (Main board)	1) Supply a colour bar signal to VIDEO IN, connect an oscilloscope to IC501-9 of the PRE/REC board. 2) Record the colour bar signal. 3) Adjust R246 for 0.42 Vp-p pedestal level between centers of the waveform outline at the pedestal portion.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
6	REC colour level and Ch balance	• PB	•MH-2 colour bar •AUTO tracking off	•IC1-41 (VIDEO UNIT)	•R215 (MAIN board)	1) Connect an oscilloscope to IC1-41 and observe colour signal level. 2) Set the MH-2 alignment tape into the cassette housing, play back the colour bar segment of MH-2 alignment tape. 3) Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the ''V'' and ''Λ'' TV PROG buttons. 4) Adjust by pressing the ''V'' and ''Λ'' TV PROG buttons of the Front panel for maximum level of the colour waveform and make a note of the higher colour level ''A''. 5) Press the STOP button on the FRONT panel and eject the MH-2 alignment tape.
		• REC then PB	 Fig. 2-5-7 REC colour level			6) Set recording video cassette into the cassette housing. Supply a colour bar signal to VIDEO IN. 7) Trigger the oscilloscope externally with the signal from TP411 (DRUM FF) of the Main board. Use (−) trigger for CH1 and (+) triger for CH2. 8) Record a colour bar signal. 9) Play back recorded colour bar signal. Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the ''V'' and ''Λ'' TV PROG buttons and confirm 85±5% of the noted colour level at IC1-41. If necessary, before recording, adjust R215 so that the higher level channel becomes 85±5% of the noted level ''A'' during playback as shown in Fig. 2-5-7. At this time, confirm that the channel level difference is within 3 dB. **Note:** ***Repeat the above step 9) several times.***
7	MESECAM DET	• EE	•SECAM colour bar	•TP280 (Main board)	•L282 (Main board)	1) Connect an oscilloscope to TP280. 2) Adjust L282 so that A and B are related as follows: A : B = 3 : 4  **Fig. 2-5-8** MESECAM detector

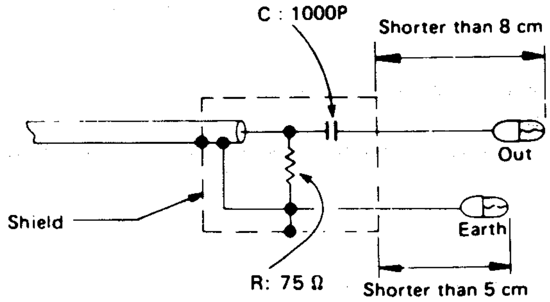
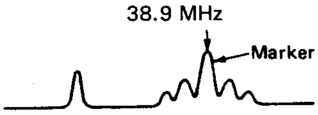
2.6 AUDIO CIRCUIT

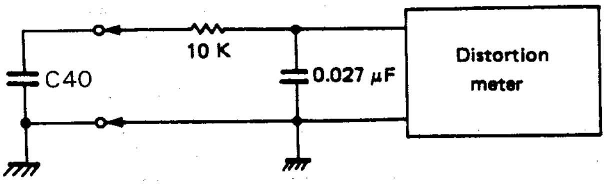
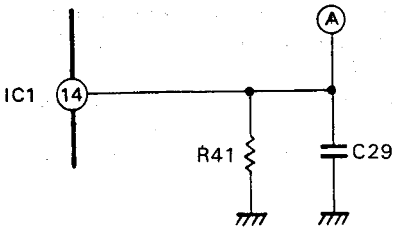
Note: ***Unless otherwise specified, all test points and adjustments are located on the MAIN board.***

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Audio bias level Purpose: Represent the best compromise of low distortion, extended high-frequency, and high output. Maladjustment: Result in poor signal-to-noise ratio and severe distortion.	•REC	•No input signal •AUX	•TP331 (+) •TP332 (−)	•B301, B302 (Bias adj)	1) Set recording video cassette into the cassette housing. 2) Set for the REC mode without all incoming signal. 3) Connect a millivoltmeter between TP331 (INPUT) and TP332 (GND), and confirm 2.6±0.5 mVrms of the bias level at TP331. If necessary, preform the step 4). 4) If level is higher than 2.6±0.5 mV, remove B301. If level is lower than 2.6±0.5 mV, remove B302.

2.7 TUNER/IF CIRCUIT

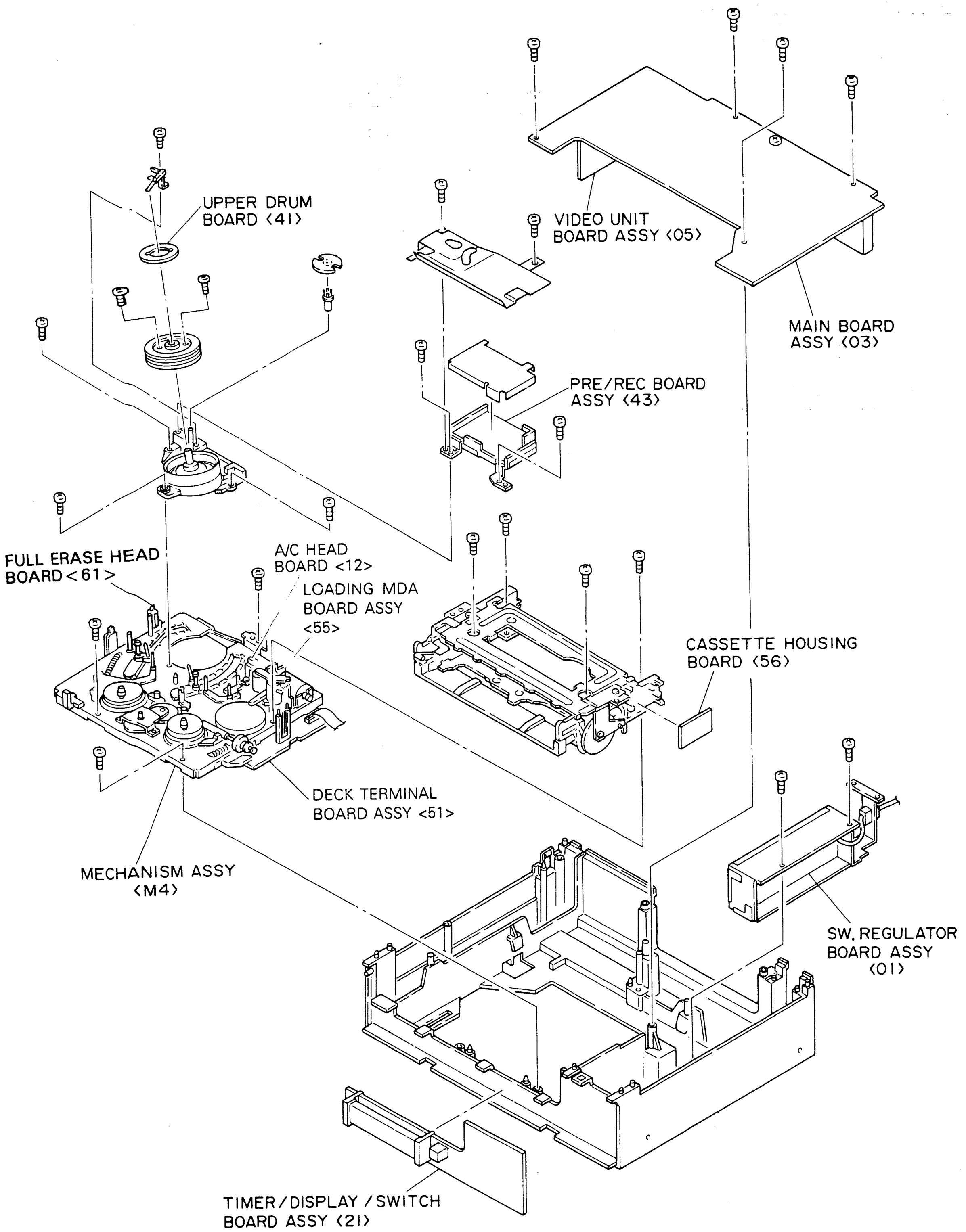
Note: *Unless otherwise specified, all test points and adjustments are located on the TUNER/IF board.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
Equipment required: 1. Oscilloscope 2. IF sweep signal generator with suitable markers (PIF, etc.) 3. Sweeper probe (sweep signal supply cable) as shown below.						 C : 1000P Shorter than 8 cm Out Shield Earth R: 75 Ω Shorter than 5 cm **Fig. 2-7-1** Sweeper probe
1	VCO	• EE	•Tuner  **Fig. 2-7-2** VCO and sweep signal (beat)	•IC1-17	•T4	1) Use a sweeper probe as shown in Fig. 2-7-1 and connect the sweep generator output to pin 1 of SAW 1. Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope. Connect the oscilloscope to pin 17 of IC1 (VIDEO DET OUT) and adjust T4 to align the waveform with the frequency marker as shown in Fig. 2-7-2.
			•Tuner •TV broadcast	•TV monitor	•T4	**Alternate method:** 1) Receive a colour broadcast on a VHF-HI channel. 2) Adjust T4 to obtain a fine picture on the monitor.
• Before the following adjustments: 1. Connect a cable to ANT IN and terminate TV OUT at 75 Ω. 2. Set a TV channel signal generator as follows. Video: 65 dBμ/75 Ω, colour bar 87.5% modulation Audio: 55 dBμ/75 Ω, 1 kHz ± 50 kHz deviation						
2	RF AGC	• EE	•Tuner •TV broadcast	•TV monitor	•R40	1) Connect the oscilloscope to IF terminal of U/V Tuner (Front end). Adjust R40 for maximum level, then again adjust R40 for −8 dB again.
						Alternate method: **Note:** ***Adjust R40 (RF AGC) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electrical fields.*** 1) Adjust R40 to minimize noise or streaks on the TV monitor. 2) Check for absence of abnormality on all channels.

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
3	SOUND DET.	• EE	• Tuner • TV broadcast	•Across C40 (Audio out) Main board	•T2 (Sound det)	1) Use a adjustment circuit as shown in Fig. 2-7-3. and with AFC mode to NORM, connect a distortion meter as shown in Fig. 2-7-3. 2) Adjust T2 for minimum distortion (less than 2.5%).
	Purpose: Set for optimum audio level. Maladjustment: Audio level will either have a small sound or no sound.					
	 **Fig. 2-7-3** Adjustment circuit			•Across C40 (Main board)		**Alternate method:** 1) Receive a color broadcast on a VHF-HI channel (7 to 13). Connect an oscilloscope to across C40 of the MAIN board. 2) Adjust T2 for maximum level at audio sound.
4	AFC	• EE	• Tuner • TV broadcast • AFC NORM by MENU	• A (Main board)	•T3 (AFC)	1) With AFC mode to NORM, connect oscilloscope to A of the MAIN board as shown in Fig. 2-7-4. 2) Set the oscilloscope to DC mode and adjust T3 to set the lower edge of the ripple waveform to 2.2 ± 0.2 V.
	Purpose: Keep the local oscillator in the receiver from drifting off proper tuning. (Set for optimum broadcast colour signal) Maladjustment: The picture will eithar have a beat or smear. In some cases it may disappear.					
	 **Fig. 2-7-4** Adjustment point			• A (Main board)	•T3 (AFC)	**Alternate method:** 1) Receive a color broadcast on a VHF-HI channel (7 to 13). 2) With AFC mode to NORM, connect oscilloscope to A of the MAIN board as shown in Fig. 2-7-4. 3) Set the oscilloscope to DC mode and adjust T3 to set the lower edge of the ripple waveform to 2.2 ± 0.2 V.

SECTION 3
CHARTS AND DIAGRAMS

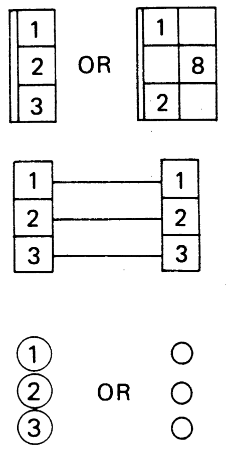
3.1 CIRCUIT BOARD AND LOCATION


UPPER DRUM BOARD ⟨41⟩
VIDEO UNIT BOARD ASSY ⟨05⟩
MAIN BOARD ASSY ⟨03⟩
PRE/REC BOARD ASSY ⟨43⟩
FULL ERASE HEAD BOARD < 61 >
A/C HEAD BOARD <12>
LOADING MDA BOARD ASSY <55>
CASSETTE HOUSING BOARD ⟨56⟩
DECK TERMINAL BOARD ASSY <51>
MECHANISM ASSY ⟨M4⟩
SW. REGULATOR BOARD ASSY ⟨01⟩
TIMER/DISPLAY/SWITCH BOARD ASSY ⟨21⟩

3.2 GENERAL INFORMATION

3.2.1 Connections

Note:
Unless otherwise specified, only signal input flow is indicated.
Connection arrows indicate only signal outputs.


1
2
3
OR
1
8
2
1
2
3
1
2
3
①
②
③
OR

: Connectors

: Board in connectors

: Direct connections

VS MS SM : Connected pattern in the board.

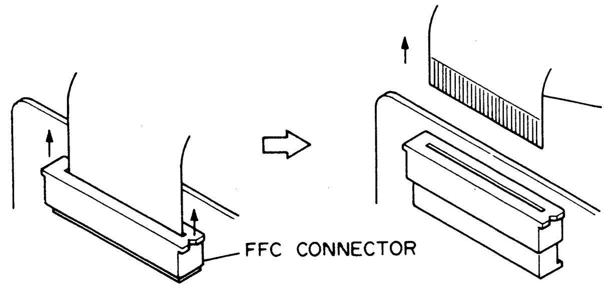
Abbreviations

V :	Video	M :	Mechacon
S :	Servo	A :	Audio

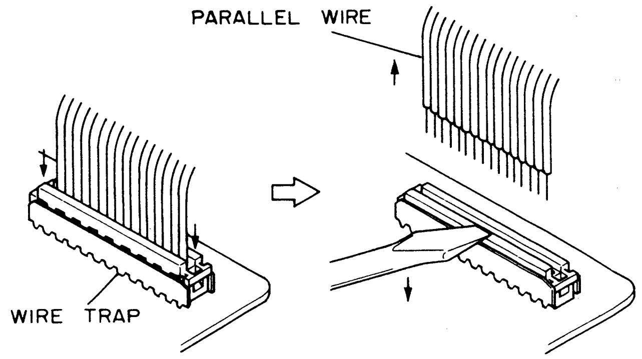
VS : Signal flow from video to servo.

3.2.2 Disconnecting the flatwire

1. Pull the connector structure upward to release the clamp when removing or inserting the flat wire cable.

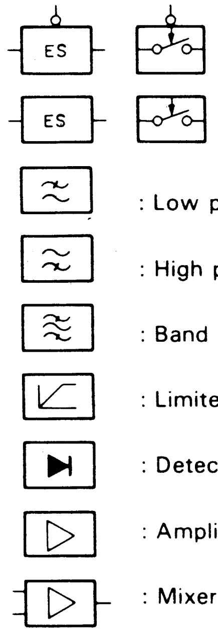

FFC CONNECTOR

2. Depress the connector structure downward to release the clamp when removing or inserting the flat wire cable, as indicated below.


PARALLEL WIRE
WIRE TRAP

3.2.3 Indications

AUX : Active only at high.
$\overline{AUX}$: Active only at low.
$\bar{A}\bar{U}\bar{X}$: Active only at middle.
$\bar{A}U\bar{X}$: Active only at open.



: Active only at low for electronic switch.

: Active only at high for electronic switch.

: Low pass filter.

: High pass filter.

: Band pass filter.

: Limiter.

: Detector

: Amplifier.

: Mixer stage.

3.2.4 Schematic diagram values

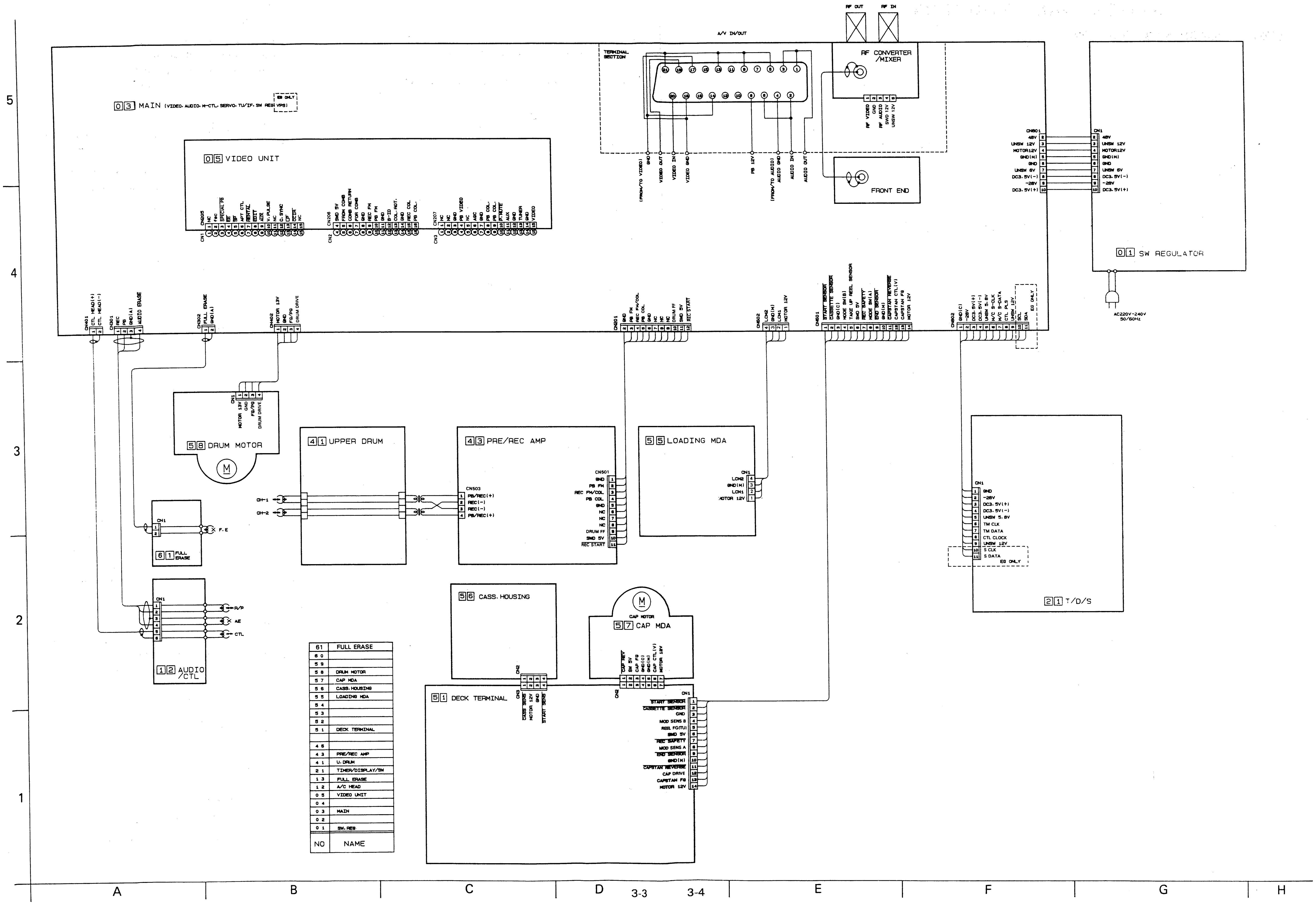
Unless otherwise specified.

1. All resistance values are in ohms, 1/6 W or 1/8 W (refer to parts list).
2. All capacitance values are in μF, (P; PF).
3. All inductance values are in μH, (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parenthesis.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (−8 dBs) during recording and playback with alignment tape (1 kHz).
8. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

3.2.5 Signal flow in the schematic

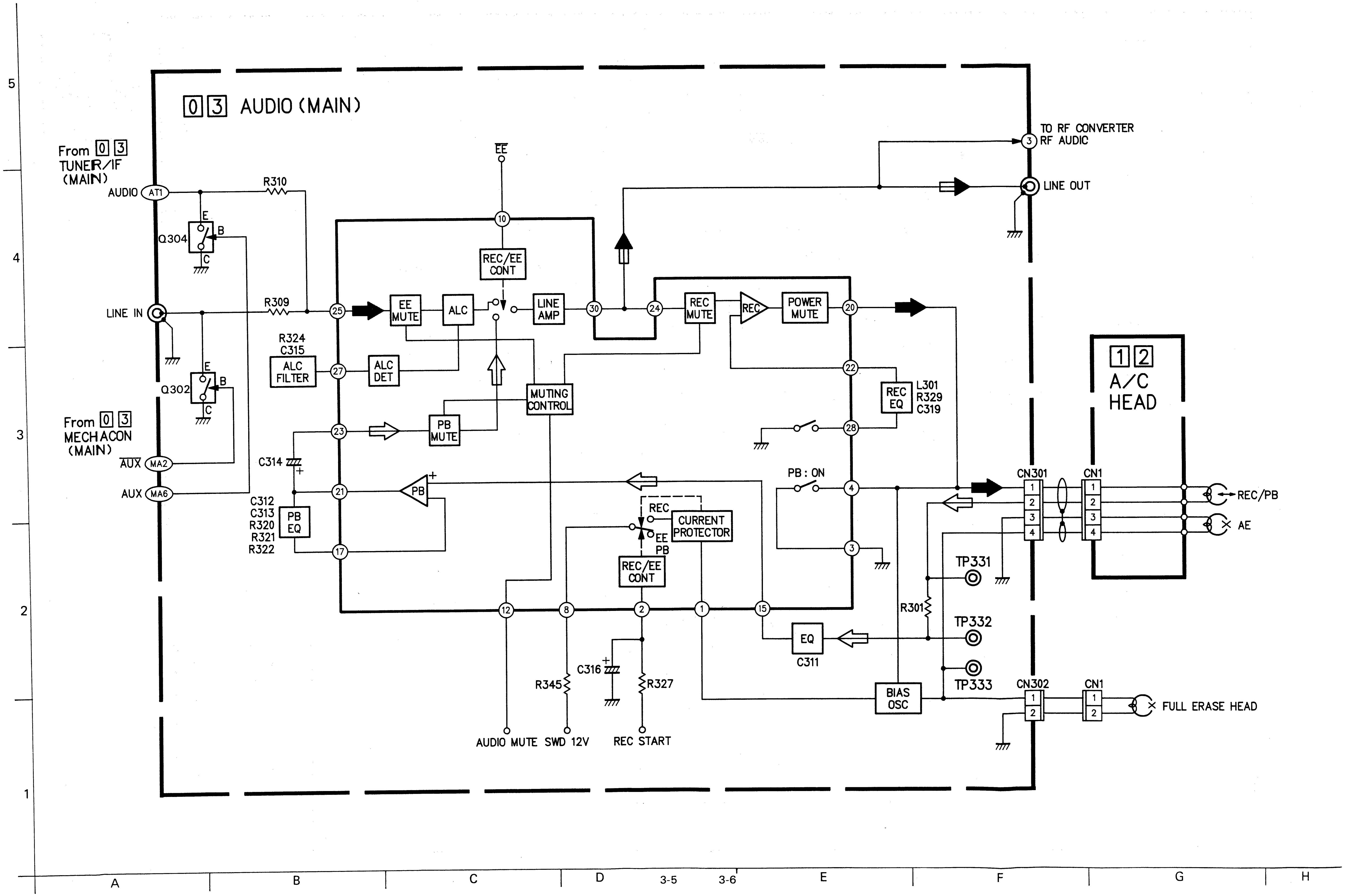
➡ Recording signal path
⇨ Playback signal path
➡ REC/PB signal path

3.3 BOARD INTERCONNECTIONS


03 MAIN (VIDEO, AUDIO, H-CTL, SERVO, TU/IF, SW REG, VPS)
EG ONLY
05 VIDEO UNIT
CN205
CN206
CN207
A/V IN/OUT
TERMINAL SECTION
RF OUT
RF IN
RF CONVERTER /MIXER
RF VIDEO
GND
RF AUDIO
SWD 12V
UNSW 12V
FRONT END
(FROM/TO VIDEO)
VIDEO OUT
VIDEO IN
VIDEO GND
PB 12V
(FROM/TO AUDIO)
AUDIO GND
AUDIO IN
AUDIO OUT
CN801
48V
UNSW 12V
MOTOR12V
GND(M)
GND
UNSW 6V
DC3.5V(-)
-28V
DC3.5V(+)
CN1
01 SW REGULATOR
AC220V-240V 50/60Hz
CN401
CTL HEAD(+)
CTL HEAD(-)
CN301
REC
PB
GND(A)
AUDIO ERASE
CN302
FULL ERASE
GND(A)
CN402
MOTOR 13V
GND
FG/PG
DRUM DRIVE
CN201
CN502
CN501
CN802
EG ONLY
58 DRUM MOTOR
M
41 UPPER DRUM
CH-1
CH-2
43 PRE/REC AMP
CN503
PB/REC(+)
REC(-)
REC(-)
PB/REC(+)
CN501
GND
PB FM
REC FM/COL
PB COL
GND
NC
NC
NC
DRUM FF
SWD 5V
REC START
55 LOADING MDA
CN1
LCM2
GND(M)
LCM1
MOTOR 12V
61 FULL ERASE
F.E
12 AUDIO /CTL
R/P
AE
CTL
56 CASS. HOUSING
CAP MOTOR
57 CAP MDA
CAP REV
SW 5V
CAP FG
GND(C)
GND(M)
CAP CTL(V)
MOTOR 12V
CN2
CN3
CASS SENS
MOTOR 12V
GND
START SENS
51 DECK TERMINAL
CN1
START SENSOR
CASSETTE SENSOR
GND
MOD SENS B
REEL FG(TU)
SWD 5V
REC SAFETY
MOD SENS A
END SENSOR
GND(M)
CAPSTAN REVERSE
CAP DRIVE
CAPSTAN FG
MOTOR 12V
CN1
GND
-28V
DC3.5V(+)
DC3.5V(-)
UNSW 5.8V
TM CLK
TM DATA
CTL CLOCK
UNSW 12V
S CLK
S DATA
EG ONLY
21 T/D/S
1
2
3
4
5
A
B
C
D
E
F
G
H

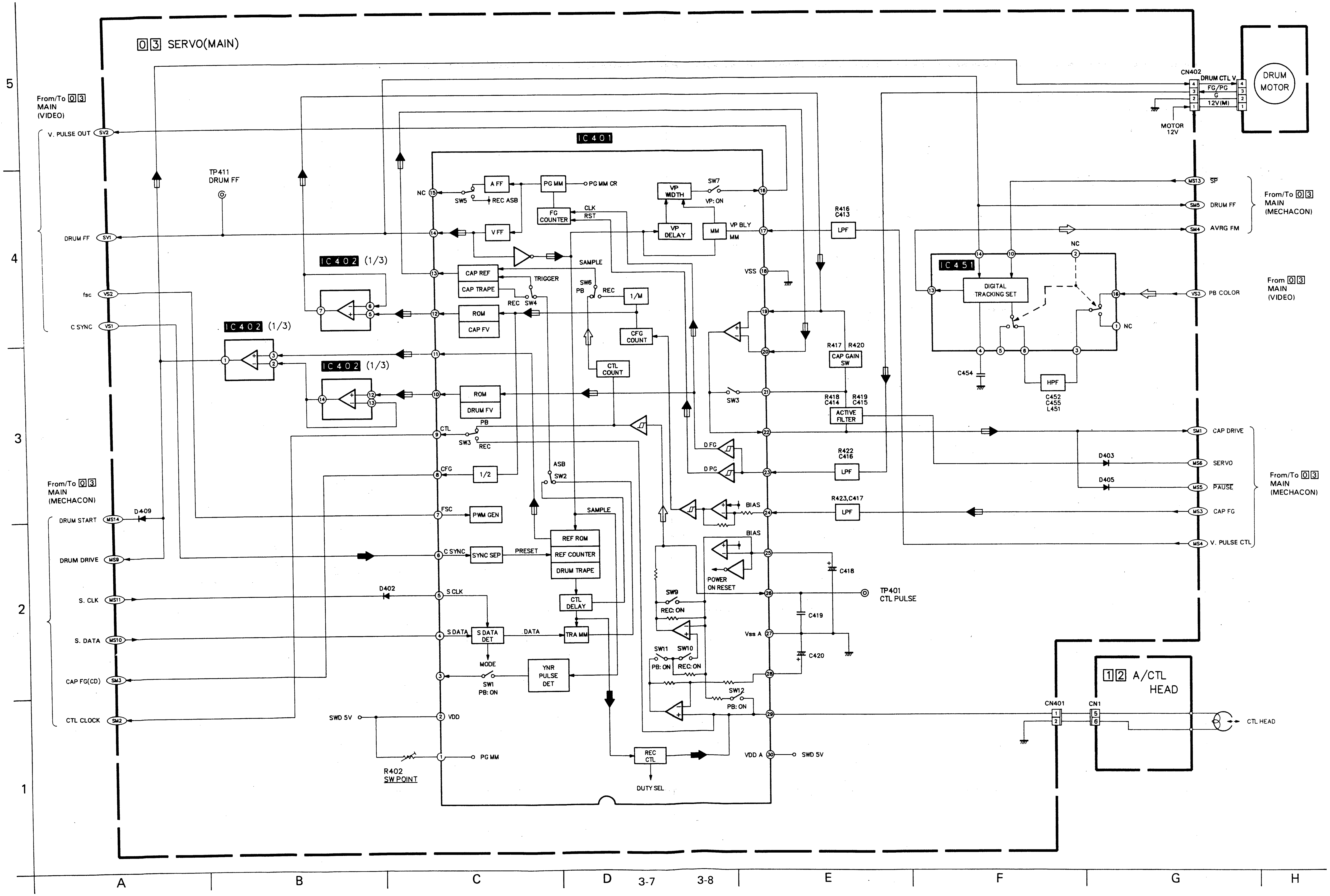
NO	NAME
61	FULL ERASE
6 0	
5 9	
5 8	DRUM MOTOR
5 7	CAP MDA
5 6	CASS. HOUSING
5 5	LOADING MDA
5 4	
5 3	
5 2	
5 1	DECK TERMINAL
4 6	
4 3	PRE/REC AMP
4 1	U. DRUM
2 1	TIMER/DISPLAY/SW
1 3	FULL ERASE
1 2	A/C HEAD
0 5	VIDEO UNIT
0 4	
0 3	MAIN
0 2	
0 1	SW. REG

3.4 AUDIO BLOCK DIAGRAM



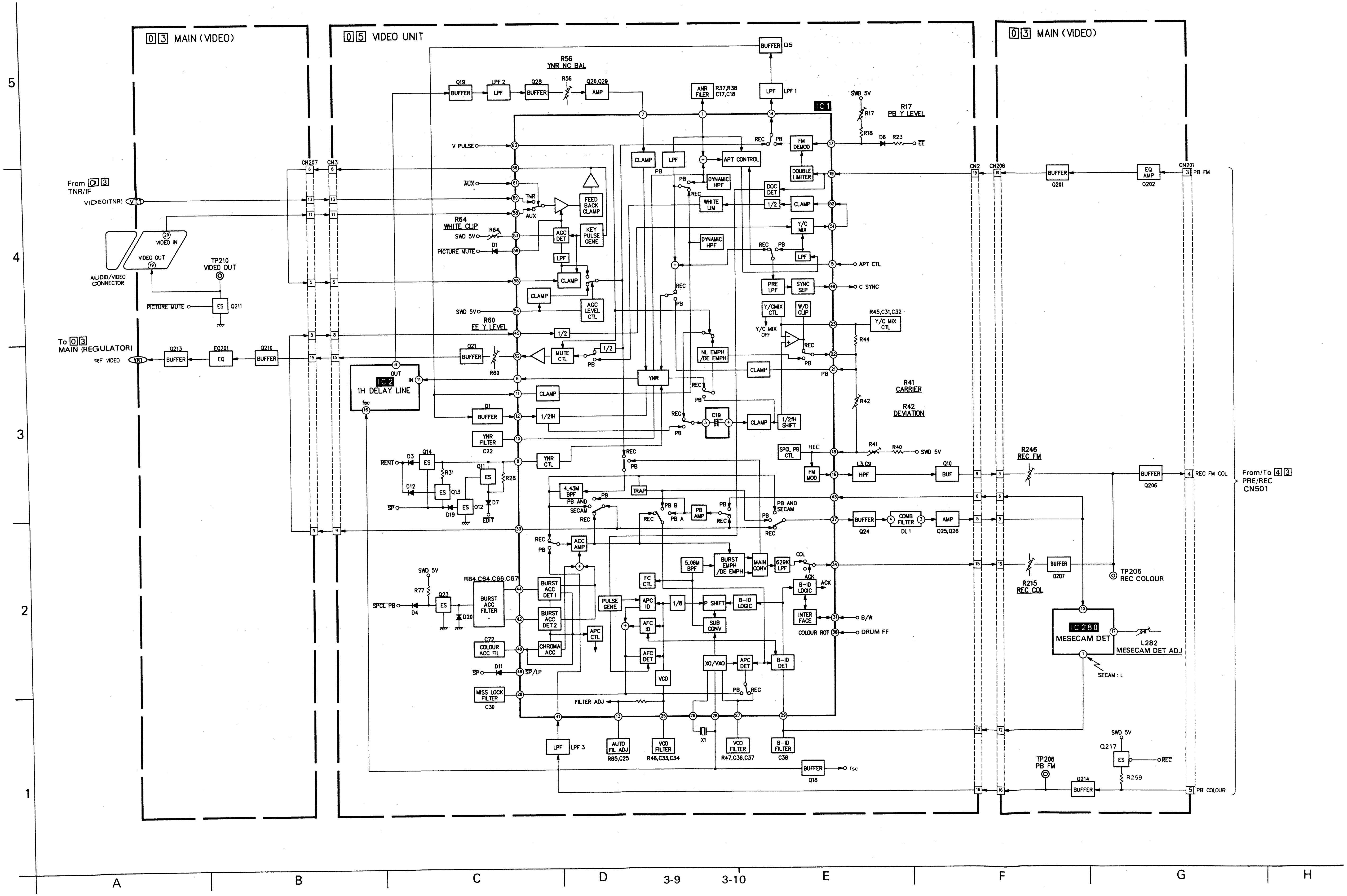
0 3 AUDIO (MAIN)
From 0 3 TUNER/IF (MAIN)
AUDIO
AT1
R310
Q304
E
B
C
LINE IN
R309
Q302
From 0 3 MECHACON (MAIN)
AUX
MA2
AUX
MA6
EE
10
REC/EE CONT
25
EE MUTE
ALC
LINE AMP
30
24
REC MUTE
REC
POWER MUTE
20
R324
C315
ALC FILTER
27
ALC DET
MUTING CONTROL
22
REC EQ
L301
R329
C319
23
PB MUTE
28
C314
PB : ON
21
PB
4
C312
C313
R320
R321
R322
PB EQ
17
REC
EE
PB
CURRENT PROTECTOR
3
REC/EE CONT
12
8
2
1
15
EQ
C311
C316
R345
R327
BIAS OSC
AUDIO MUTE
SWD 12V
REC START
TO RF CONVERTER RF AUDIO
3
LINE OUT
1 2 A/C HEAD
CN301
CN1
1
2
3
4
REC/PB
AE
TP331
R301
TP332
TP333
CN302
CN1
FULL ERASE HEAD
5
4
3
2
1
A
B
C
D
E
F
G
H

3.5 SERVO BLOCK DIAGRAM



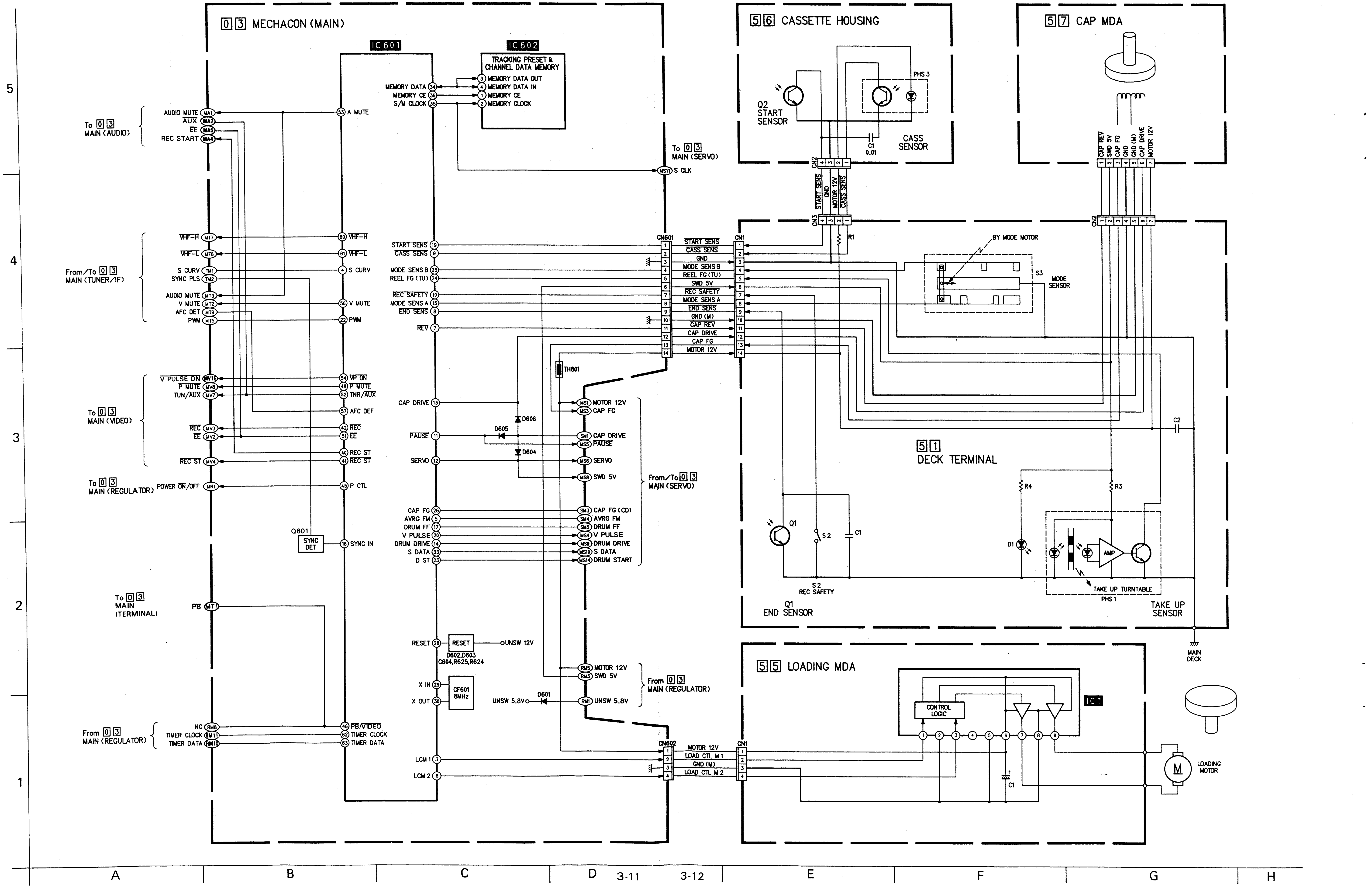
03 SERVO(MAIN)
From/To 03 MAIN (VIDEO)
V. PULSE OUT
SV2
DRUM FF
SV1
fsc
VS2
C SYNC
VS1
From/To 03 MAIN (MECHACON)
DRUM START
MS14
D409
DRUM DRIVE
MS9
S. CLK
MS11
S. DATA
MS10
CAP FG(CD)
SM3
CTL CLOCK
SM2
TP411 DRUM FF
IC402 (1/3)
IC401
NC
SW5
A FF
REC ASB
PG MM
PG MM CR
FG COUNTER
CLK
RST
VP WIDTH
SW7
VP: ON
VP DELAY
MM
VP BLY
MM
V FF
SAMPLE
CAP REF
CAP TRAPE
TRIGGER
REC
SW4
SW6
PB
REC
1/M
ROM
CAP FV
CFG COUNT
CTL COUNT
VSS
ROM
DRUM FV
CTL
PB
SW3
REC
CFG
1/2
ASB
SW2
FSC
PWM GEN
SAMPLE
REF ROM
REF COUNTER
DRUM TRAPE
C SYNC
SYNC SEP
PRESET
D402
S CLK
CTL DELAY
S DATA
S DATA DET
DATA
TRA MM
MODE
SW1
PB: ON
YNR PULSE DET
SWD 5V
VDD
R402 SW POINT
PG MM
REC CTL
DUTY SEL
VDD A
SWD 5V
SW3
D FG
D PG
BIAS
BIAS
POWER ON RESET
SW9
REC: ON
SW11
SW10
PB: ON
REC: ON
SW12
PB: ON
Vss A
R416 C413
LPF
R417
R420
CAP GAIN SW
R418 C414
R419 C415
ACTIVE FILTER
R422 C416
LPF
R423,C417
LPF
C418
C419
C420
TP401 CTL PULSE
CN402
DRUM CTL V
FG/PG
G
12V(M)
MOTOR 12V
DRUM MOTOR
SP
SM13
DRUM FF
SM5
AVRG FM
SM4
From/To 03 MAIN (MECHACON)
IC451
NC
DIGITAL TRACKING SET
NC
C454
HPF
C452 C455 L451
From 03 MAIN (VIDEO)
PB COLOR
VS3
CAP DRIVE
SM1
D403
SERVO
MS6
D405
PAUSE
MS5
CAP FG
MS3
V. PULSE CTL
MS4
From/To 03 MAIN (MECHACON)
CN401
CN1
12 A/CTL HEAD
CTL HEAD
1
2
3
4
5
A
B
C
D
E
F
G
H

3.6 VIDEO BLOCK DIAGRAM

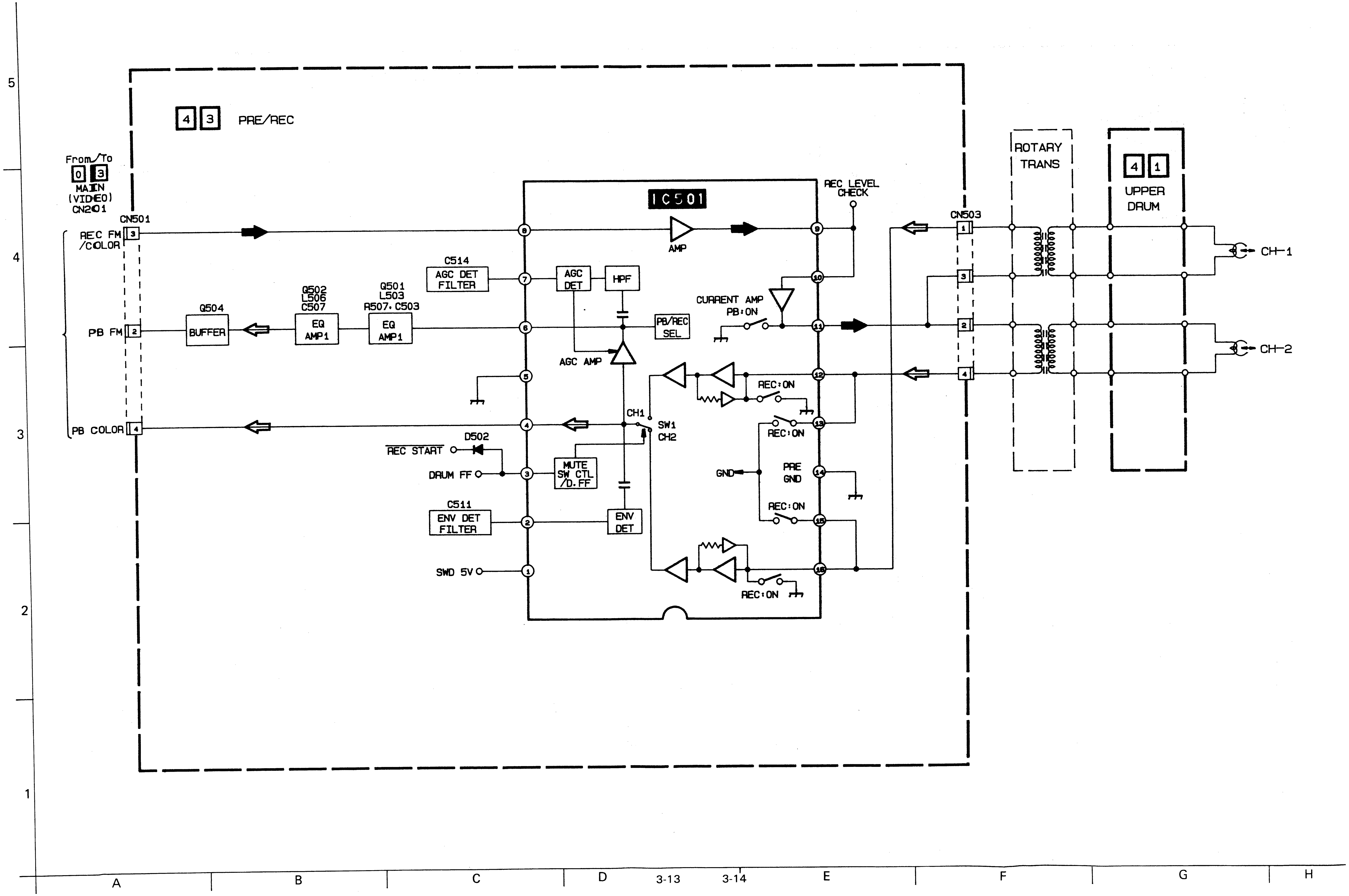


03 MAIN (VIDEO)
05 VIDEO UNIT
03 MAIN (VIDEO)
From 03 TNR/IF
VIDEO(TNR)
AUDIO/VIDEO CONNECTOR
VIDEO IN
VIDEO OUT
TP210 VIDEO OUT
PICTURE MUTE
ES Q211
To 03 MAIN (REGULATOR)
RF VIDEO
Q213 BUFFER
EQ201 EQ
Q210 BUFFER
CN207
CN3
IC2 1H DELAY LINE
OUT
IN
fsc
IC1
Q19 BUFFER
LPF 2 LPF
Q28 BUFFER
R56 YNR NC BAL
Q20,Q29 AMP
ANR FILER R37,R38 C17,C18
BUFFER Q5
LPF LPF 1
APT CONTROL
FM DEMOD
DOUBLE LIMITER
DYNAMIC HPF
DOC DET
WHITE LIM
CLAMP
Y/C MIX
LPF
PRE LPF
SYNC SEP
Y/CMIX CTL
W/D CLIP
FEED BACK CLAMP
KEY PULSE GENE
AGC DET
AGC LEVEL CTL
MUTE CTL
NL EMPH /DE EMPH
YNR
C19
1/2fH SHIFT
V PULSE
AUX
TNR
R64 WHITE CLIP
SWD 5V
PICTURE MUTE
R60 EE Y LEVEL
Q21 BUFFER
Q1 BUFFER
1/2fH
YNR FILTER C22
YNR CTL
RENT
Q14 ES
Q11 ES
Q13 ES
Q12 ES
EDIT
SP
4.43M BPF
PB AND SECAM
TRAP
PB AMP
PB A
PB B
ACC AMP
5.06M BPF
BURST EMPH /DE EMPH
MAIN CONV
629K LPF
COL
ACK
B-ID LOGIC
INTER FACE
FC CTL
PULSE GENE
APC ID
AFC ID
1/8
P SHIFT
SUB CONV
XO/VXO
APC DET
B-ID DET
VCO
R84,C64,C66,C67
BURST ACC FILTER
BURST ACC DET 1
BURST ACC DET 2
C72 COLOUR ACC FIL
CHROMA ACC
APC CTL
SPCL PB
Q23 ES
D20
SP/LP
MISS LOCK FILTER C30
FILTER ADJ
LPF LPF 3
AUTO FIL ADJ R85,C25
VCO FILTER R46,C33,C34
X1
VCO FILTER R47,C36,C37
B-ID FILTER C38
BUFFER Q18
fsc
SWD 5V
R17 PB Y LEVEL
D6 R23 EE
APT CTL
C SYNC
R45,C31,C32 Y/C MIX CTL
R44
R41 CARRIER
R42 DEVIATION
R40 SWD 5V
SPCL PB CTL
FM MOD
L3,C9 HPF
Q10 BUF
BUFFER Q24
COMB FILTER DL1
AMP Q25,Q26
B/W
COLOUR ROT
DRUM FF
CN2
CN206
CN201
BUFFER Q201
EQ AMP Q202
PB FM
R246 REC FM
BUFFER Q206
REC FM COL
From/To 43 PRE/REC CN501
R215 REC COL
BUFFER Q207
TP205 REC COLOUR
IC280 MESECAM DET
L282 MESECAM DET ADJ
SECAM : L
SWD 5V
Q217 ES
R259
REC
TP206 PB FM
Q214 BUFFER
PB COLOUR
1
2
3
4
5
A
B
C
D
E
F
G
H

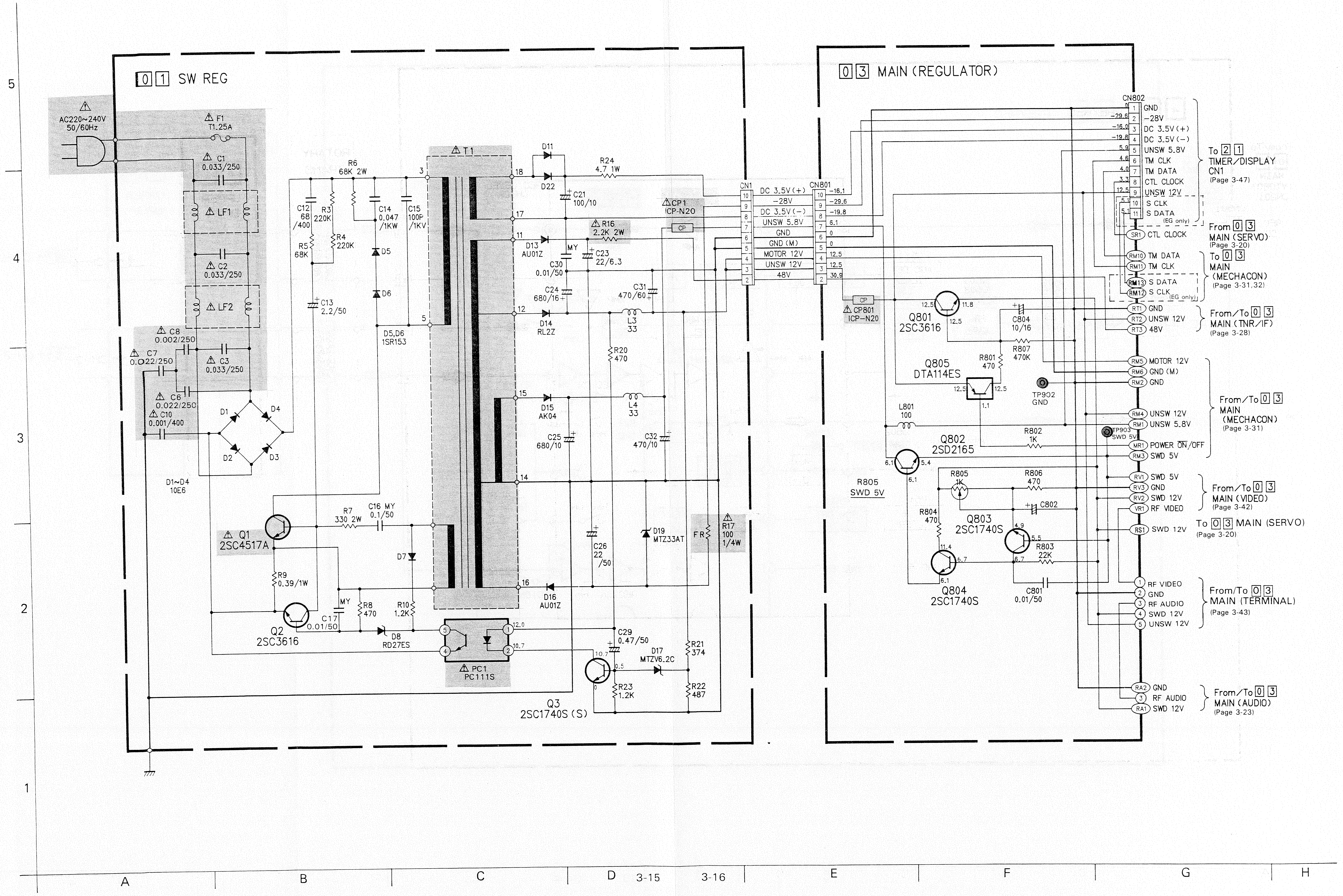
3.7 MECHACON BLOCK DIAGRAM


0 3 MECHACON (MAIN)
IC601
IC602
TRACKING PRESET & CHANNEL DATA MEMORY
MEMORY DATA OUT
MEMORY DATA IN
MEMORY CE
MEMORY CLOCK
MEMORY DATA 34
MEMORY CE 36
S/M CLOCK 35
53 A MUTE
To 0 3 MAIN (AUDIO)
AUDIO MUTE MA1
AUX MA2
EE MA5
REC START MA4
To 0 3 MAIN (SERVO)
MS11 S CLK
From/To 0 3 MAIN (TUNER/IF)
VHF-H MT7
VHF-L MT6
S CURV MT1
SYNC PLS MT2
AUDIO MUTE MT3
V MUTE MT2
AFC DET MT9
PWM MT5
60 VHF-H
61 VHF-L
4 S CURV
56 V MUTE
22 PWM
To 0 3 MAIN (VIDEO)
V PULSE ON MV10
P MUTE MV8
TUN/AUX MV7
REC MV3
EE MV2
REC ST MV4
54 VP ON
48 P MUTE
52 TNR/AUX
57 AFC DEF
42 REC
51 EE
40 REC ST
41 REC ST
To 0 3 MAIN (REGULATOR)
POWER ON/OFF MR1
45 P CTL
Q601
SYNC DET
16 SYNC IN
To 0 3 MAIN (TERMINAL)
PB MT1
From 0 3 MAIN (REGULATOR)
NC RM8
TIMER CLOCK RM11
TIMER DATA RM10
46 PB/VIDEO
62 TIMER CLOCK
63 TIMER DATA
START SENS 19
CASS SENS 9
MODE SENS B 25
REEL FG (TU) 24
REC SAFETY 10
MODE SENS A 15
END SENS 8
REV 7
CAP DRIVE 13
PAUSE 11
SERVO 12
CAP FG 26
AVRG FM 5
DRUM FF 17
V PULSE 20
DRUM DRIVE 14
S DATA 33
D ST 23
RESET 28
RESET
UNSW 12V
D602,D603
C604,R625,R624
X IN 29
X OUT 30
CF601
8MHz
LCM 1 3
LCM 2 6
CN601
START SENS
CASS SENS
GND
MODE SENS B
REEL FG (TU)
SWD 5V
REC SAFETY
MODE SENS A
END SENS
GND (M)
CAP REV
CAP DRIVE
CAP FG
MOTOR 12V
TH601
D606
D605
D604
MS1 MOTOR 12V
MS3 CAP FG
SM1 CAP DRIVE
MS5 PAUSE
MS6 SERVO
MS8 SWD 5V
From/To 0 3 MAIN (SERVO)
SM3 CAP FG (CD)
SM4 AVRG FM
SM5 DRUM FF
MS4 V PULSE
MS9 DRUM DRIVE
MS10 S DATA
MS14 DRUM START
RM5 MOTOR 12V
RM3 SWD 5V
From 0 3 MAIN (REGULATOR)
D601
UNSW 5.8V
RM1 UNSW 5.8V
CN602
MOTOR 12V
LOAD CTL M1
GND (M)
LOAD CTL M2
CN1
5 6 CASSETTE HOUSING
PHS 3
Q2 START SENSOR
C1 0.01
CASS SENSOR
CN2
START SENS
GND
MOTOR 12V
CASS SENS
CN3
R1
5 7 CAP MDA
CAP REV
SWD 5V
CAP FG
GND
GND (M)
CAP DRIVE
MOTOR 12V
CN2
BY MODE MOTOR
S3
MODE SENSOR
C2
5 1 DECK TERMINAL
R4
R3
Q1
S 2
C1
D1
AMP
TAKE UP TURNTABLE
PHS1
S 2 REC SAFETY
Q1 END SENSOR
TAKE UP SENSOR
MAIN DECK
5 5 LOADING MDA
IC1
CONTROL LOGIC
C1
M
LOADING MOTOR
1
2
3
4
5
A
B
C
D
E
F
G
H

3.8 PRE/REC BLOCK DIAGRAM

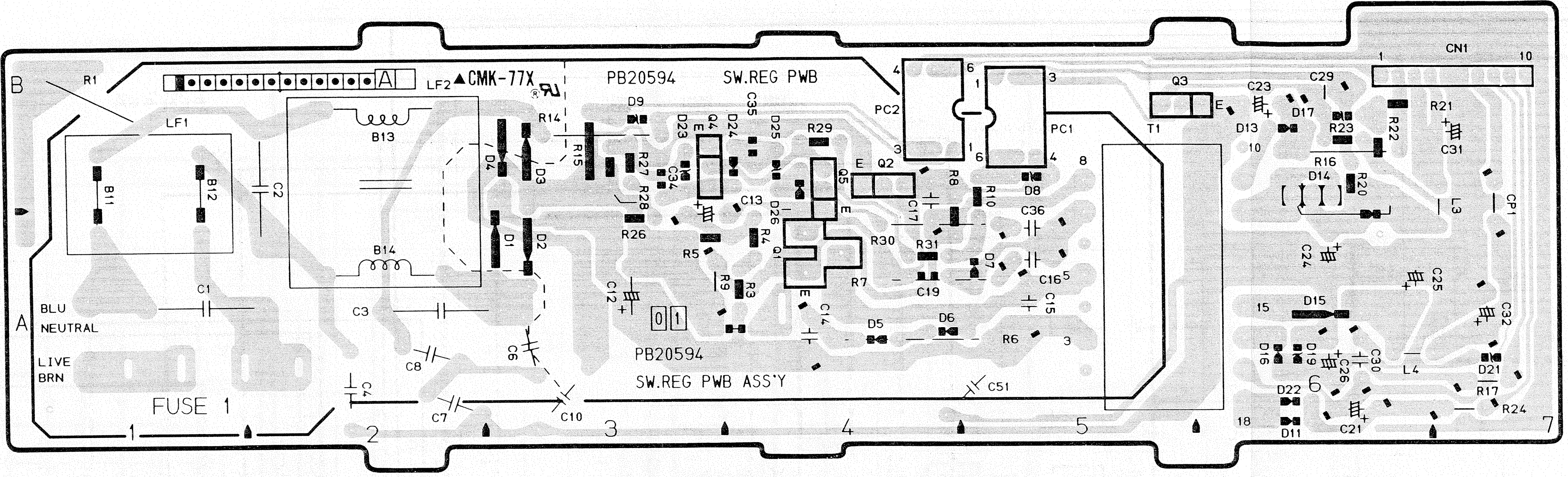

43 PRE/REC
From/To
03
MAIN
(VIDEO)
CN201
CN501
REC FM /COLOR
PB FM
PB COLOR
Q504
BUFFER
Q502
L506
C507
EQ AMP1
Q501
L503
R507, C503
EQ AMP1
C514
AGC DET FILTER
AGC DET
HPF
PB/REC SEL
AGC AMP
IC501
AMP
REC LEVEL CHECK
CURRENT AMP
PB: ON
REC: ON
CH1
SW1
CH2
D502
REC START
DRUM FF
MUTE SW CTL /D.FF
C511
ENV DET FILTER
ENV DET
SWD 5V
GND
PRE GND
CN503
ROTARY TRANS
41
UPPER DRUM
CH-1
CH-2
1
2
3
4
5
A
B
C
D
E
F
G
H

3.9 SWITCHING REGULATOR AND REGULATOR (MAIN) SCHEMATIC DIAGRAMS

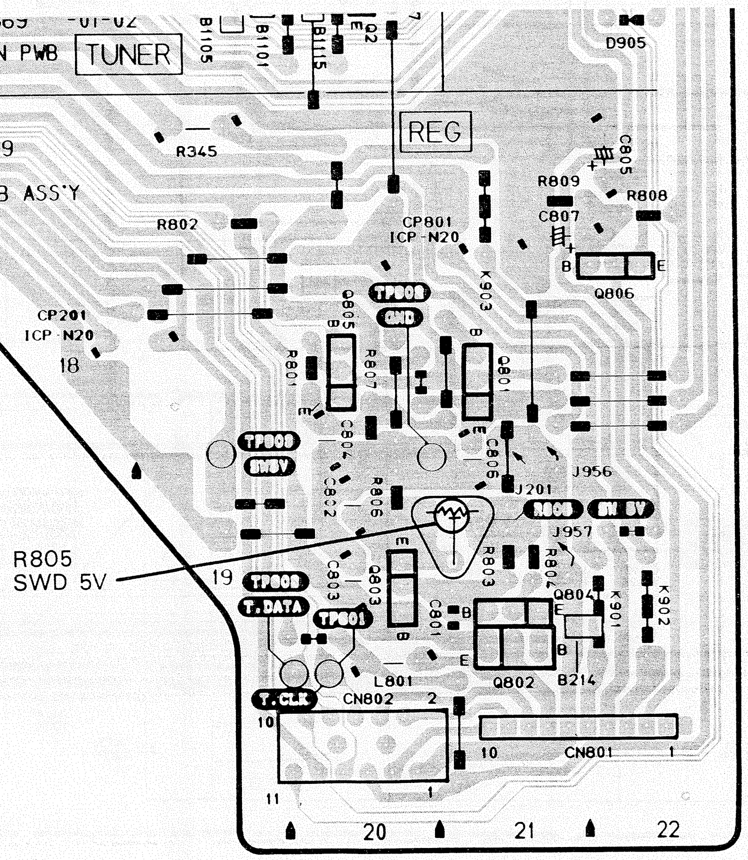

0 1 SW REG
AC220~240V 50/60Hz
F1 T1.25A
C1 0.033/250
LF1
C2 0.033/250
LF2
C8 0.002/250
C7 0.022/250
C3 0.033/250
C6 0.022/250
C10 0.001/400
D1 D2 D3 D4
D1~D4 10E6
R6 68K 2W
C12 68/400
R3 220K
R4 220K
R5 68K
C14 0.047/1KW
C15 100P/1KV
C13 2.2/50
D5 D6
D5,D6 1SR153
T1
D11
D22
R24 4.7 1W
C21 100/10
R16 2.2K 2W
D13 AU01Z
C30 0.01/50
C23 22/6.3
C24 680/16
C31 470/6.3
D14 RL2Z
L3 33
R20 470
D15 AK04
L4 33
C25 680/10
C32 470/10
Q1 2SC4517A
R7 330 2W
C16 MY 0.1/50
D7
R9 0.39/1W
Q2 2SC3616
C17 0.01/50
R8 470
R10 1.2K
D8 RD27ES
PC1 PC111S
D16 AU01Z
C26 22/50
D19 MTZ33AT
R17 100 1/4W
FR
C29 0.47/50
D17 MTZV6.2C
R21 374
R22 487
R23 1.2K
Q3 2SC1740S (S)
CP1 ICP-N20
CN1
10 DC 3.5V (+)
9 -28V
8 DC 3.5V (-)
7 UNSW 5.8V
6 GND
5 GND (M)
4 MOTOR 12V
3 UNSW 12V
2 48V
0 3 MAIN (REGULATOR)
CN801
-16.1 -29.6 -19.8 6.1 0 0 12.5 12.5 30.9
CP801 ICP-N20
Q801 2SC3616
C804 10/16
R807 470K
R801 470
Q805 DTA114ES
TP902 GND
L801 100
TP903 SWD 5V
R802 1K
Q802 2SD2165
R805 SWD 5V
R805 1K
R806 470
C802
R804 470
Q803 2SC1740S
R803 22K
Q804 2SC1740S
C801 0.01/50
CN802
1 GND
2 -28V
3 DC 3.5V (+)
4 DC 3.5V (-)
5 UNSW 5.8V
6 TM CLK
7 TM DATA
8 CTL CLOCK
9 UNSW 12V
10 S CLK
11 S DATA
(EG only)
To 2 1 TIMER/DISPLAY CN1 (Page 3-47)
SR1 CTL CLOCK
From 0 3 MAIN (SERVO) (Page 3-20)
RM10 TM DATA
RM11 TM CLK
RM13 S DATA
RM12 S CLK
(EG only)
To 0 3 MAIN (MECHACON) (Page 3-31,32)
RT1 GND
RT2 UNSW 12V
RT3 48V
From/To 0 3 MAIN (TNR/IF) (Page 3-28)
RM5 MOTOR 12V
RM6 GND (M)
RM2 GND
RM4 UNSW 12V
RM1 UNSW 5.8V
MR1 POWER ON/OFF
RM3 SWD 5V
From/To 0 3 MAIN (MECHACON) (Page 3-31)
RV1 SWD 5V
RV3 GND
RV2 SWD 12V
VR1 RF VIDEO
From/To 0 3 MAIN (VIDEO) (Page 3-42)
RS1 SWD 12V
To 0 3 MAIN (SERVO) (Page 3-20)
1 RF VIDEO
2 GND
3 RF AUDIO
4 SWD 12V
5 UNSW 12V
From/To 0 3 MAIN (TERMINAL) (Page 3-43)
RA2 GND
3 RF AUDIO
RA1 SWD 12V
From/To 0 3 MAIN (AUDIO) (Page 3-23)
A B C D E F G H
1 2 3 4 5

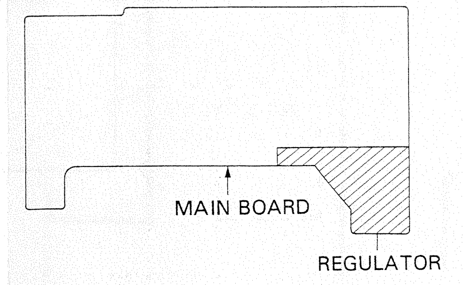
3.10 SWITCHING REGULATOR CIRCUIT BOARD

–SW REGULATOR–


PB20594
SW.REG PWB
PB20594
SW.REG PWB ASS'Y
CMK-77X
LF1
LF2
R1
B11
B12
B13
B14
C1
C2
C3
C4
C6
C7
C8
C10
D1
D2
D3
D4
BLU
NEUTRAL
LIVE
BRN
FUSE 1
PC1
PC2
T1
Q1
Q2
Q3
CN1
L3
L4
A
B
1
2
3
4
5
6
7

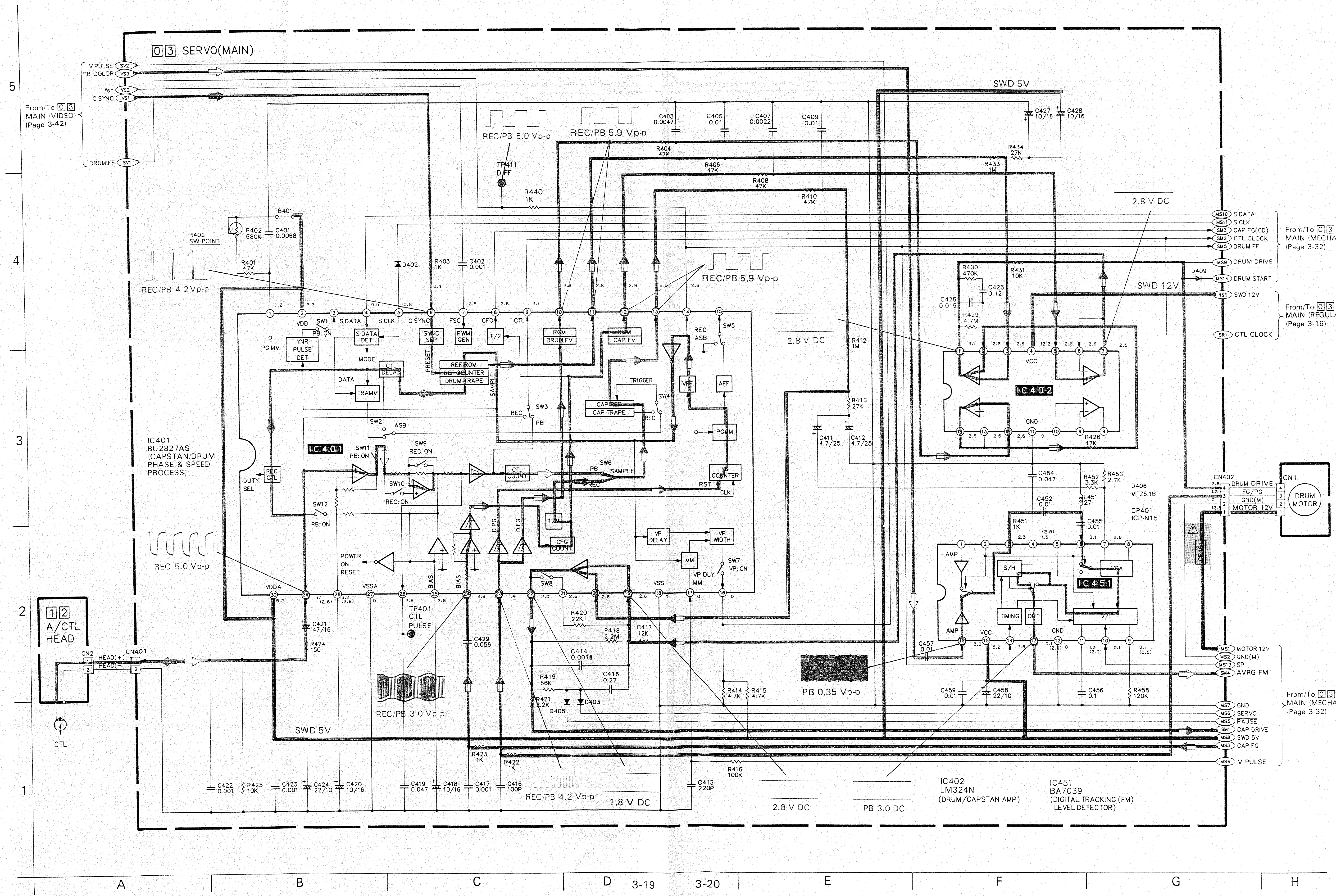
–REGULATOR (MAIN)–


MAIN PWB
TUNER
REG
PB10669
PB10669
MAIN PWB ASS'Y
MAIN PWB ASS'Y
CP801
ICP-N20
CP201
ICP-N20
R805
SWD 5V
Q801
Q802
Q803
Q804
Q805
Q806
CN801
CN802
L801
B214
D905
J956
J957
15
16
17
18
19
20
21
22

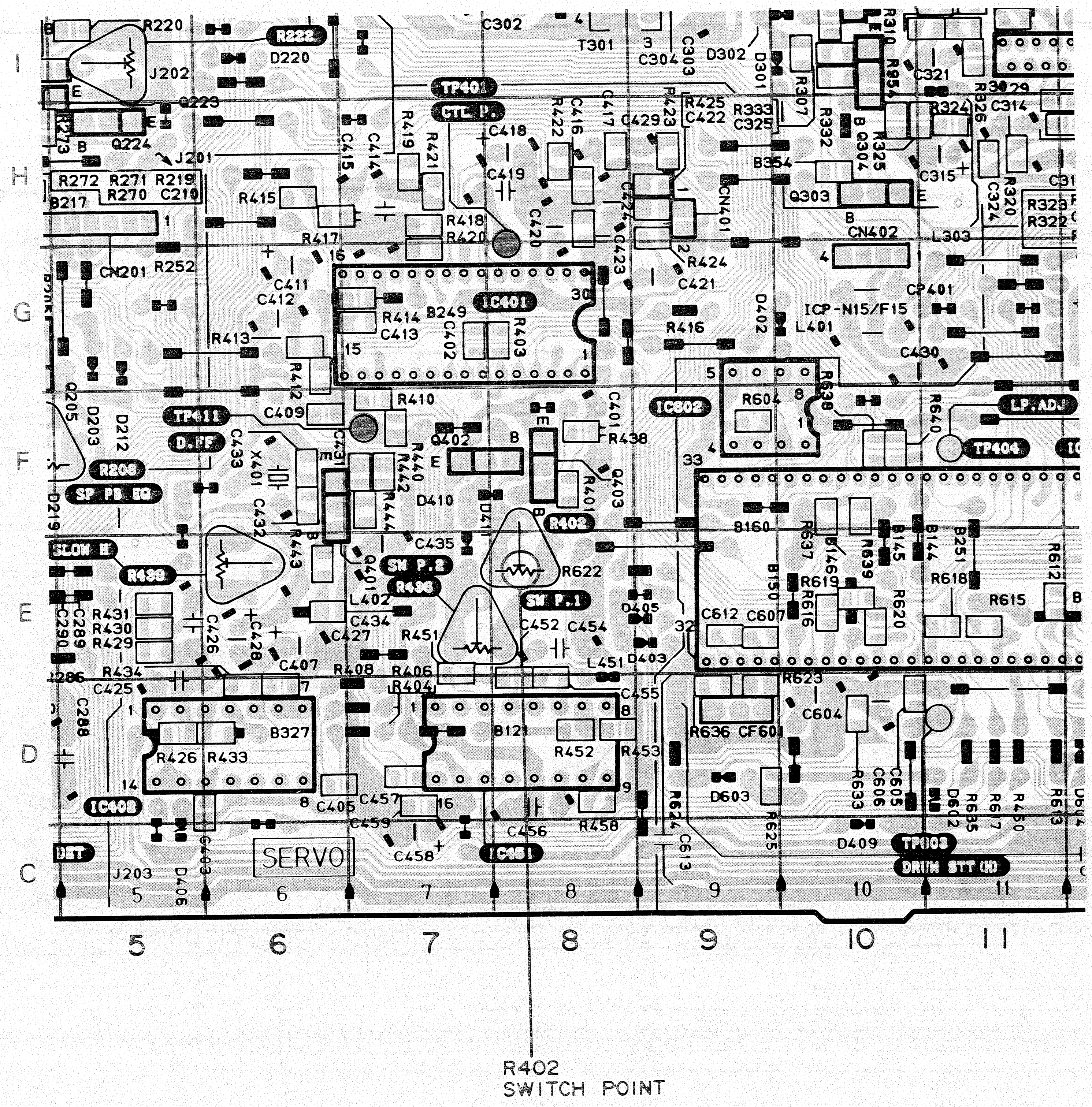

MAIN BOARD
REGULATOR

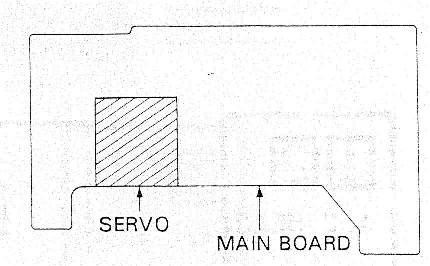
MAIN board assembly is located in Page 3-37, 38

3.11 SERVO SCHEMATIC DIAGRAM


03 SERVO(MAIN)
From/To 03 MAIN (VIDEO) (Page 3-42)
V PULSE SV2
PB COLOR VS3
fsc VS2
C SYNC VS1
DRUM FF SV1
SWD 5V
C403 0.0047
C405 0.01
C407 0.0022
C409 0.01
C427 10/16
C428 10/16
REC/PB 5.0 Vp-p
REC/PB 5.9 Vp-p
TP411 D.FF
R404 47K
R406 47K
R408 47K
R410 47K
R434 27K
R433 1M
R440 1K
2.8 V DC
B401
R402 680K
C401 0.0068
R402 SW POINT
R401 47K
D402
R403 1K
C402 0.001
REC/PB 4.2 Vp-p
REC/PB 5.9 Vp-p
MS10 S DATA
MS11 S CLK
SM3 CAP FG(CD)
SM2 CTL CLOCK
SM5 DRUM FF
MS9 DRUM DRIVE
MS14 DRUM START
From/To 03 MAIN (MECHACON) (Page 3-32)
D409
SWD 12V
RS1 SWD 12V
SR1 CTL CLOCK
From/To 03 MAIN (REGULATOR) (Page 3-16)
R430 470K
R431 10K
C426 0.12
C425 0.015
R429 4.7M
VCC
IC402
GND
R426 47K
2.8 V DC
R412 1M
R413 27K
C411 4.7/25
C412 4.7/25
VDD
SW1 PB: ON
S DATA
S CLK
C SYNC
FSC
CFG
CTL
PG MM
YNR PULSE DET
S DATA DET
MODE
SYNC SEP
PWM GEN
1/2
RGM DRUM FV
RGM CAP FV
REC ASB
SW5
PRESET
REF RGM
REF COUNTER
DRUM TRAPE
SAMPLE
CTL DELAY
DATA
TRAMM
TRIGGER
SW4
CAP REF
CAP TRAPE
REC
VPF
AFF
SW3
PB
SW2
ASB
PGMM
IC401
IC401 BU2827AS (CAPSTAN/DRUM PHASE & SPEED PROCESS)
REC CTL
DUTY SEL
SW11 PB: ON
SW9 REC: ON
SW10 REC: ON
SW12 PB: ON
CTL COUNT
SW6 PB SAMPLE REC
FG COUNTER
RST
CLK
C454 0.047
R452 3.3K
R453 2.7K
D406 MTZ5.1B
CP401 ICP-N15
C452 0.01
L451 27
R451 1K
C455 0.01
CN402 DRUM DRIVE FG/PG GND(M) MOTOR 12V
CN1
DRUM MOTOR
CP401
D PG
D FG
1/4
CFG COUNT
VP DELAY
VP WIDTH
MM
SW7 VP: ON
VP DLY MM
POWER ON RESET
REC 5.0 Vp-p
VDDA
VSSA
VSS
BIAS
SW8
TP401 CTL PULSE
C421 47/16
R424 150
C429 0.056
R420 22K
R418 2.2M
R417 12K
C414 0.0018
R419 56K
C415 0.27
R421 2.2K
D405
D403
R414 4.7K
R415 4.7K
PB 0.35 Vp-p
AMP
S/H
VCA
IC451
TIMING
OUT
V/I
C457 0.01
C459 0.01
C458 22/10
C456 0.1
R458 120K
MS1 MOTOR 12V
MS2 GND(M)
MS13 SP
SM4 AVRG FM
MS7 GND
MS6 SERVO
MS5 PAUSE
SM1 CAP DRIVE
MS8 SWD 5V
MS3 CAP FG
MS4 V PULSE
From/To 03 MAIN (MECHACON) (Page 3-32)
12 A/CTL HEAD
CN2 HEAD(+) HEAD(-)
CN401
CTL
REC/PB 3.0 Vp-p
SWD 5V
R423 1K
R422 1K
R416 100K
C422 0.001
R425 10K
C423 0.001
C424 22/10
C420 10/16
C419 0.047
C418 10/16
C417 0.001
C416 100P
REC/PB 4.2 Vp-p
1.8 V DC
C413 220P
2.8 V DC
PB 3.0 DC
IC402 LM324N (DRUM/CAPSTAN AMP)
IC451 BA7039 (DIGITAL TRACKING (FM) LEVEL DETECTOR)
5
4
3
2
1
A
B
C
D
E
F
G
H

3.12 SERVO (MAIN) CIRCUIT BOARD


I
H
G
F
E
D
C
5
6
7
8
9
10
11
J202
J201
J203
CN201
CN401
CN402
IC401
IC402
IC451
IC602
TP401
TP411
TP404
TP603
CTL P.
D.FF
R208
SP PB EQ
SLOW H
R439
SW P.2
R436
SW P.1
R402
R222
LP. ADJ
DRUM STT (H)
DET
T301
ICP-N15/F15
CF601
X401
SERVO
R402
SWITCH POINT

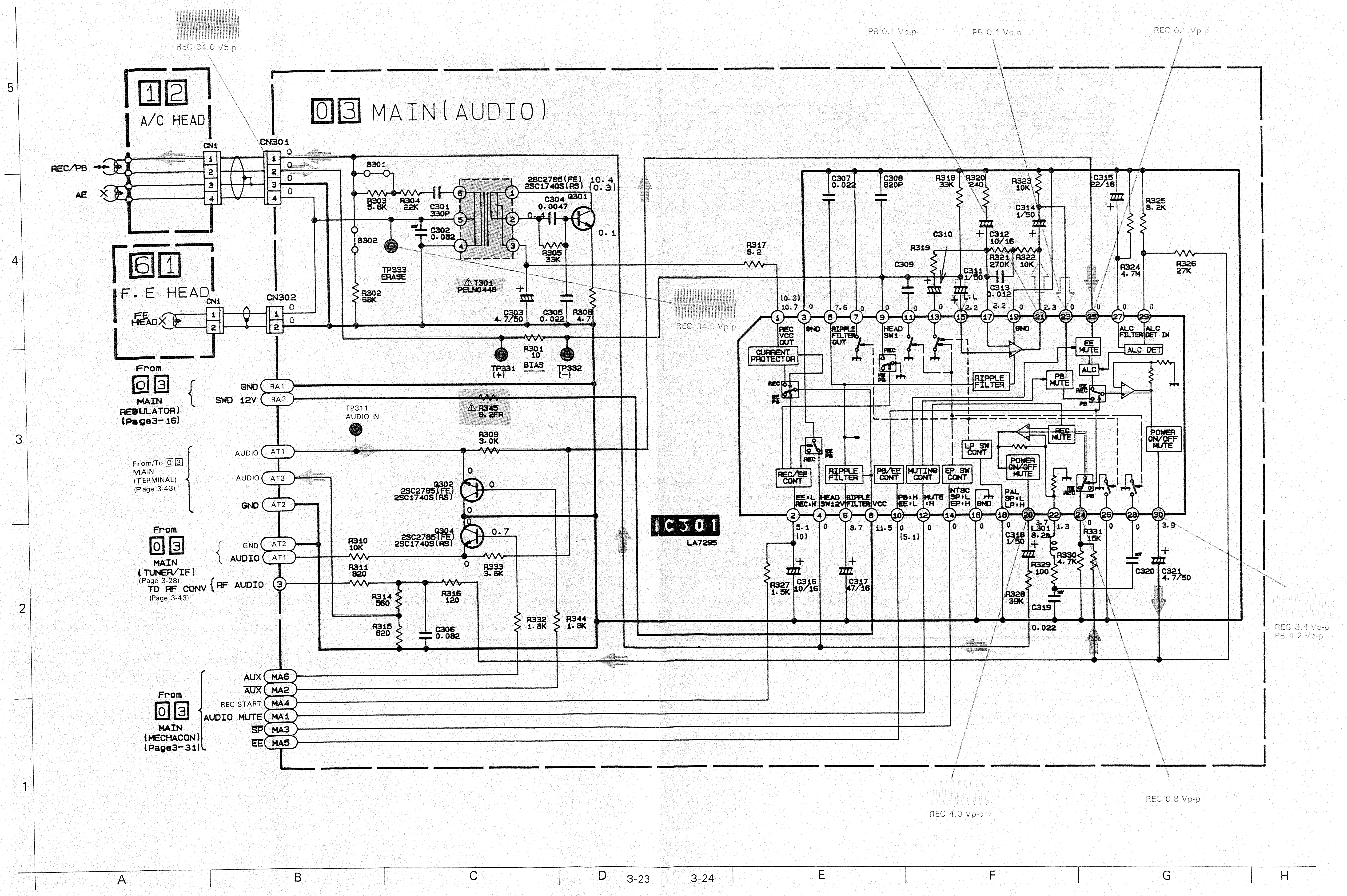

SERVO
MAIN BOARD

MAIN board assembly is located in Page 3-37, 38

· Only chip parts

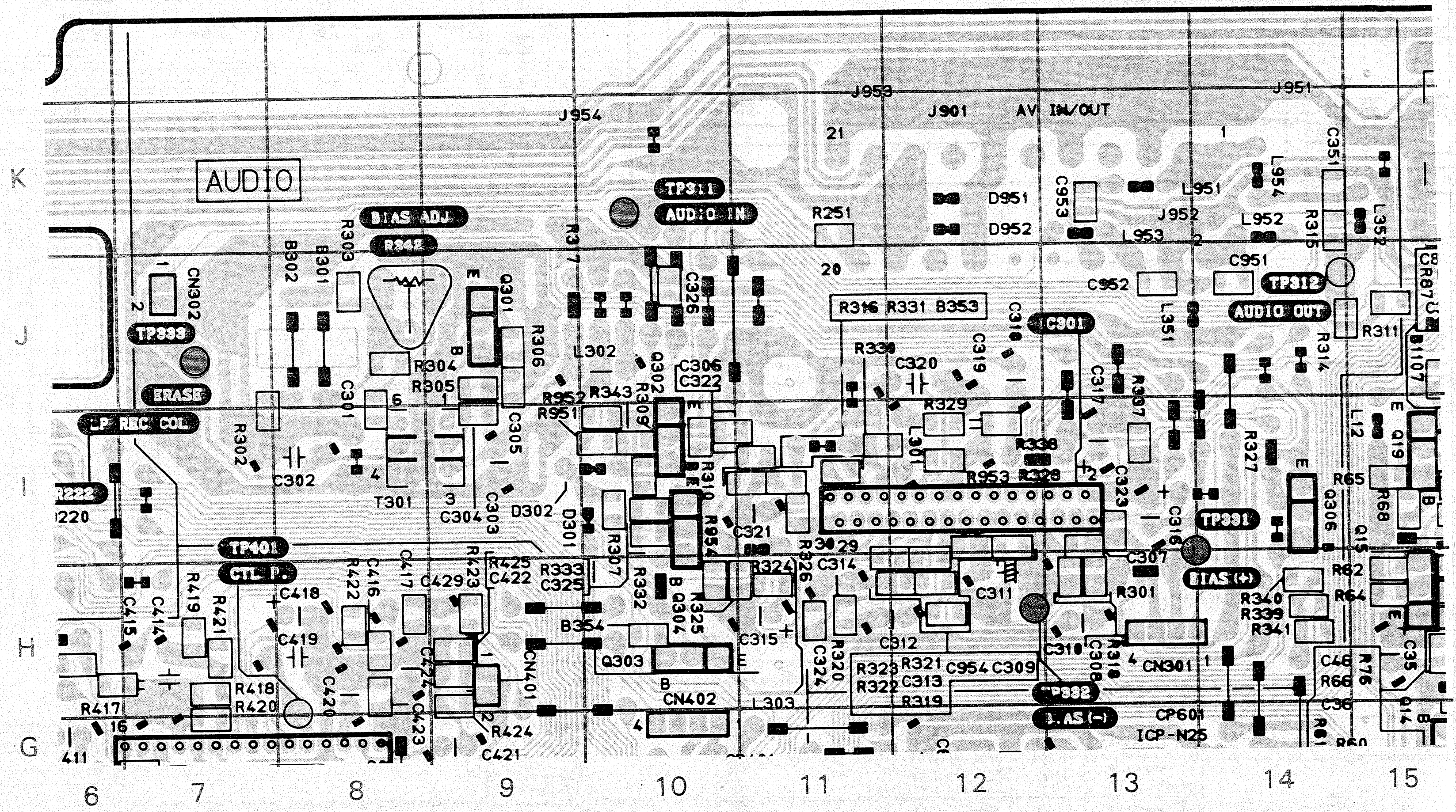
REF No.	LOCATION	REF No.	LOCATION
RESISTOR		CAPACITOR	
R401	F8	C402	G7
R403	G8	C403	D5
R410	F7	C405	D6
R412	G6	C407	D6
R413	G6	C409	F6
R414	G7	C413	G7
R415	H6	C416	H8
R417	H6	C417	H8
R418	H7	C422	H9
R419	H7	C423	H8
R420	G7	C455	D8
R421	H7	C457	D7
R422	H8	C459	D7
R423	H9		
R424	H9		
R425	H9		
R426	D5		
R429	E5		
R430	E5		
R431	E5		
R433	D6		
R434	D6		
R440	F7		
R451	E7		
R452	D8		
R453	D8		
R458	D8		

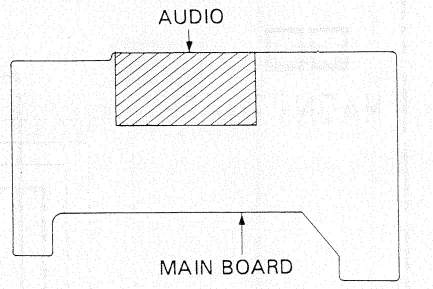
3.13 AUDIO SCHEMATIC DIAGRAM



REC 34.0 Vp-p
PB 0.1 Vp-p
PB 0.1 Vp-p
REC 0.1 Vp-p
12 A/C HEAD
61 F.E HEAD
03 MAIN(AUDIO)
CN1
CN301
CN302
REC/PB
AE
FE HEAD
B301
B302
R303 5.6K
R304 22K
C301 330P
C302 0.082
R302 68K
TP333 ERASE
T301 PELN0448
2SC2785(FE) 2SC1740S(RS)
Q301
10.4 (0.3)
C304 0.0047
0.1
R305 33K
C303 4.7/50
C305 0.022
R306 4.7
R301 10
BIAS
TP331 (+)
TP332 (−)
R317 8.2
REC 34.0 Vp-p
From 03 MAIN REGULATOR (Page3-16)
GND RA1
SWD 12V RA2
TP311 AUDIO IN
R345 8.2FR
R309 3.0K
From/To 03 MAIN (TERMINAL) (Page 3-43)
AUDIO AT1
AUDIO AT3
GND AT2
Q302 2SC2785(FE) 2SC1740S(RS)
Q304 2SC2785(FE) 2SC1740S(RS)
0.7
From 03 MAIN (TUNER/IF) (Page 3-28)
GND AT2
AUDIO AT1
TO RF CONV (Page 3-43)
RF AUDIO 3
R310 10K
R311 820
R333 3.6K
R314 560
R316 120
R315 620
C306 0.082
R332 1.8K
R344 1.8K
From 03 MAIN (MECHACON) (Page3-31)
AUX MA6
AUX MA2
REC START MA4
AUDIO MUTE MA1
SP MA3
EE MA5
IC301 LA7295
C307 0.022
C308 820P
R318 33K
R320 240
R323 10K
C315 22/16
R325 8.2K
C314 1/50
C310
C312 10/16
R319
R321 270K
R322 10K
C309
C311 1/50
C313 0.012
R324 4.7M
R326 27K
(0.3) 10.7
7.6
2.2
2.3
REC VCC OUT
GND
RIPPLE FILTER OUT
HEAD SW1
ALC FILTER
ALC DET IN
CURRENT PROTECTOR
EE MUTE
ALC DET
ALC
RIPPLE FILTER
PB MUTE
REC
PB
REC MUTE
POWER ON/OFF MUTE
LP SW CONT
REC/EE CONT
RIPPLE FILTER
PB/EE CONT
MUTING CONT
EP SW CONT
NTSC SP:L EP:H
PAL SP:L LP:H
EE:L REC:H
HEAD SW12V
RIPPLE FILTER
VCC
PB:H EE:L
MUTE :H
GND
5.1 (0)
8.7
11.5
(5.1)
3.7
1.3
3.9
C318 1/50
L301 8.2m
R331 15K
R329 100
R330 4.7K
R328 39K
C319 0.022
C320
C321 4.7/50
R327 1.5K
C316 10/16
C317 47/16
REC 3.4 Vp-p
PB 4.2 Vp-p
REC 4.0 Vp-p
REC 0.8 Vp-p
1 2 3 4 5
A B C D E F G H

3.14 AUDIO (MAIN) CIRCUIT BOARD


AUDIO
K
J
I
H
G
6
7
8
9
10
11
12
13
14
15
J954
J953
J901
AV IN/OUT
J951
TP311
AUDIO IN
BIAS ADJ.
R342
TP333
ERASE
LP REC COIL
TP312
AUDIO OUT
IC301
TP331
BIAS (+)
TP332
B.AS (-)
TP401
CTL P.
CN302
CN301
CN401
CN402
T301
Q301
Q302
Q303
Q304
Q306
L302
L303
L951
L952
L953
D951
D952
D301
D302
CP601
ICP-N25

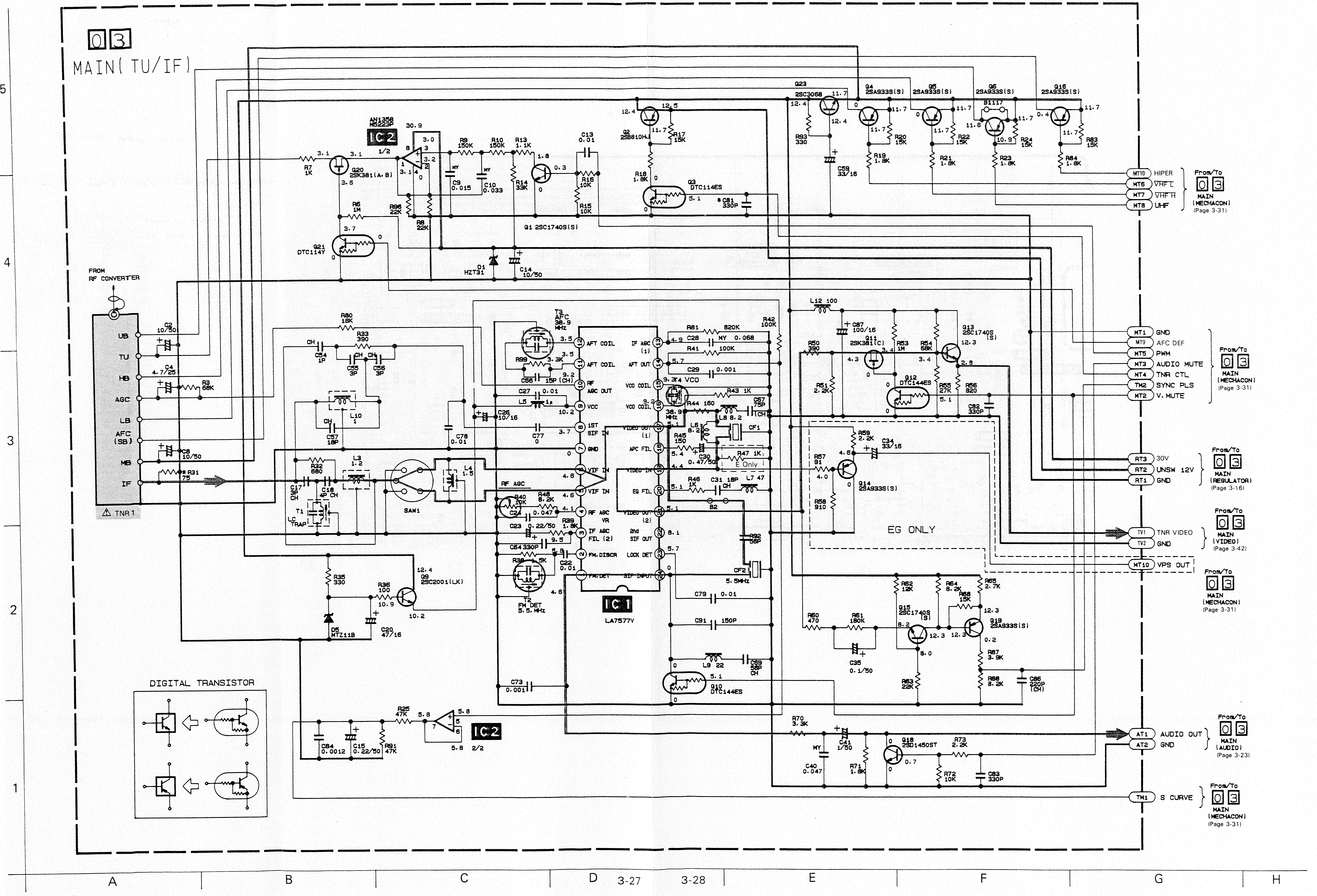

AUDIO
MAIN BOARD

MAIN board assembly is located in Page 3-37, 38

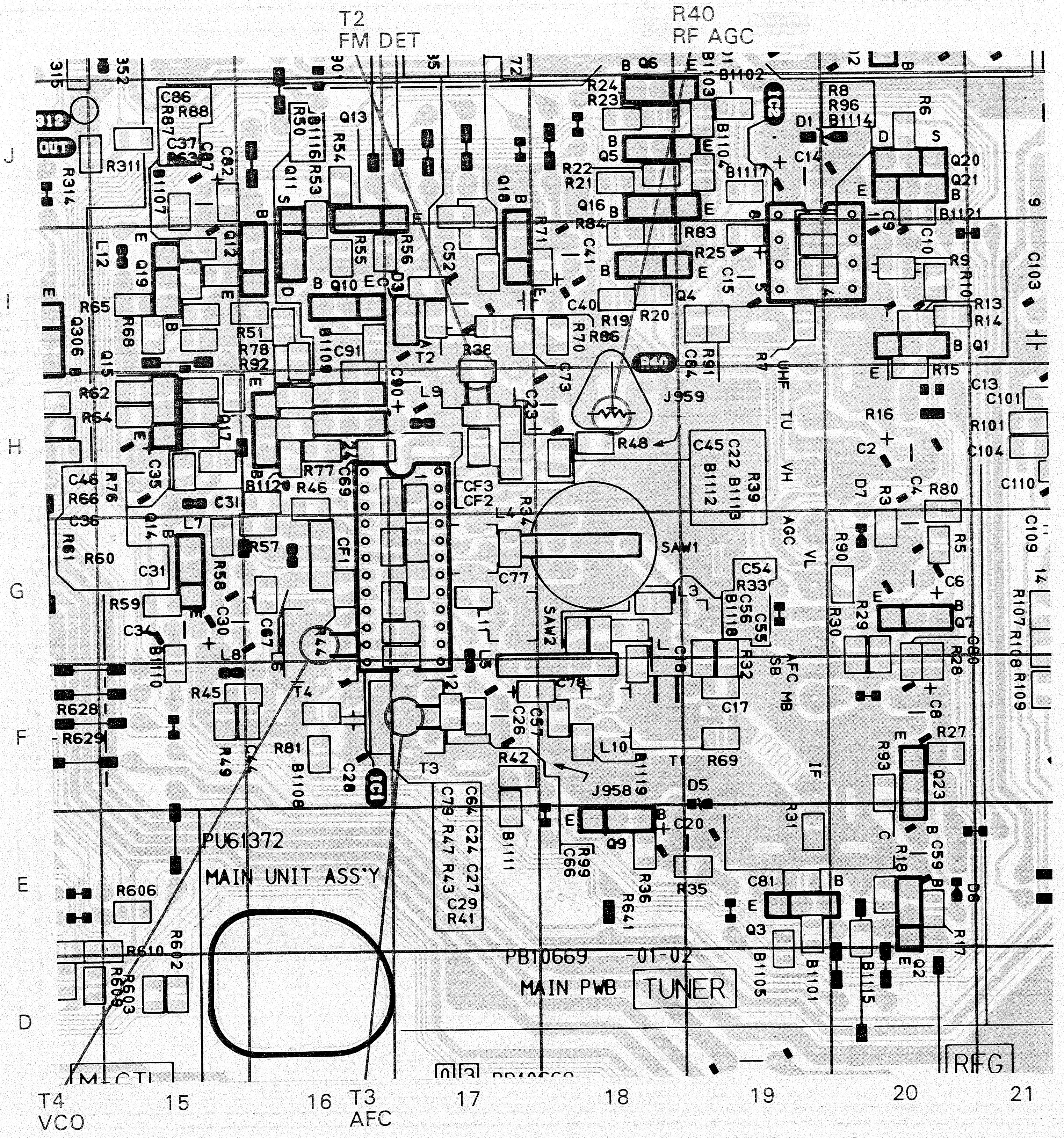
- Only chip parts

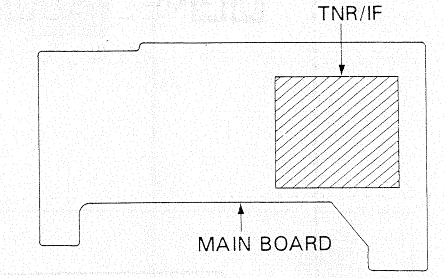
REF No.	LOCATION	REF No.	LOCATION
RESISTOR		CAPACITOR	
R302	I7	C301	I8
R303	J8	C304	I9
R304	J8	C305	J9
R305	J9	C306	I10
R306	J9	C307	I13
R309	I10	C308	I13
R310	I10	C313	H12
R311	I15		
R314	J14		
R315	K14		
R316	I16		
R318	I13		
R320	H11		
R321	H12		
R322	H12		
R323	H12		
R324	H11		
R325	H11		
R326	I11		
R329	I12		
R330	I11		
R331	I11		
R333	I10		

3.15 TUNER/IF (MAIN) SCHEMATIC DIAGRAM


03
MAIN(TU/IF)
FROM RF CONVERTER
UB
TU
HB
AGC
LB
AFC (SB)
MB
IF
TNR1
AN1358 M5223P
IC2 1/2
IC2 2/2
IC1 LA7577V
Q1 2SC1740S(S)
Q2 2SB810HJ
Q3 DTC114ES
Q4 2SA933S(S)
Q5 2SA933S(S)
Q6 2SA933S(S)
Q9 2SC2001(LK)
Q10 DTC144ES
Q11 2SK381(C)
Q12 DTC144ES
Q13 2SC1740S(S)
Q14 2SA933S(S)
Q15 2SC1740S(S)
Q16 2SA933S(S)
Q18 2SD1450ST
Q19 2SA933S(S)
Q20 2SK381(A,B)
Q21 DTC114Y
Q23 2SC3068
D1 HZT31
D5 MTZ11B
SAW1
T1 LC TRAP
T2 FM DET 5.5 MHz
T3 AFC 38.9 MHz
T4 VCO
CF1
CF2 5.5MHz
AFT COIL
RF AGC OUT
VCC
1ST SIF IN
GND
VIF IN
RF AGC VR
IF AGC FIL (2)
FM DISCR
FM DET
IF AGC (1)
AFT OUT
VCO COIL
VIDEO OUT (1)
APC FIL
VIDEO IN
EQ FIL
VIDEO OUT (2)
2nd SIF OUT
LOCK DET
SIF INPUT
E Only
EG ONLY
DIGITAL TRANSISTOR
MT10 HIPER
MT6 VHF L
MT7 VHF H
MT8 UHF
From/To 03 MAIN (MECHACON) (Page 3-31)
MT1 GND
MT9 AFC DEF
MT5 PWM
MT3 AUDIO MUTE
MT4 TNR CTL
TM2 SYNC PLS
MT2 V. MUTE
From/To 03 MAIN (MECHACON) (Page 3-31)
RT3 30V
RT2 UNSW 12V
RT1 GND
From/To 03 MAIN (REGULATOR) (Page 3-16)
TV1 TNR VIDEO
TV2 GND
From/To 03 MAIN (VIDEO) (Page 3-42)
MT10 VPS OUT
From/To 03 MAIN (MECHACON) (Page 3-31)
AT1 AUDIO OUT
AT2 GND
From/To 03 MAIN (AUDIO) (Page 3-23)
TM1 S CURVE
From/To 03 MAIN (MECHACON) (Page 3-31)
1
2
3
4
5
A
B
C
D
E
F
G
H

3.16 TUNER/IF (MAIN) CIRCUIT BOARD


T2
FM DET
R40
RF AGC
T4
VCO
T3
AFC
J
I
H
G
F
E
D
15
16
17
18
19
20
21
PU61372
MAIN UNIT ASS'Y
PB10669 -01-02
MAIN PWB TUNER
SAW1
SAW2
IC1
IC2
J958
J959
M-CTL
RFG

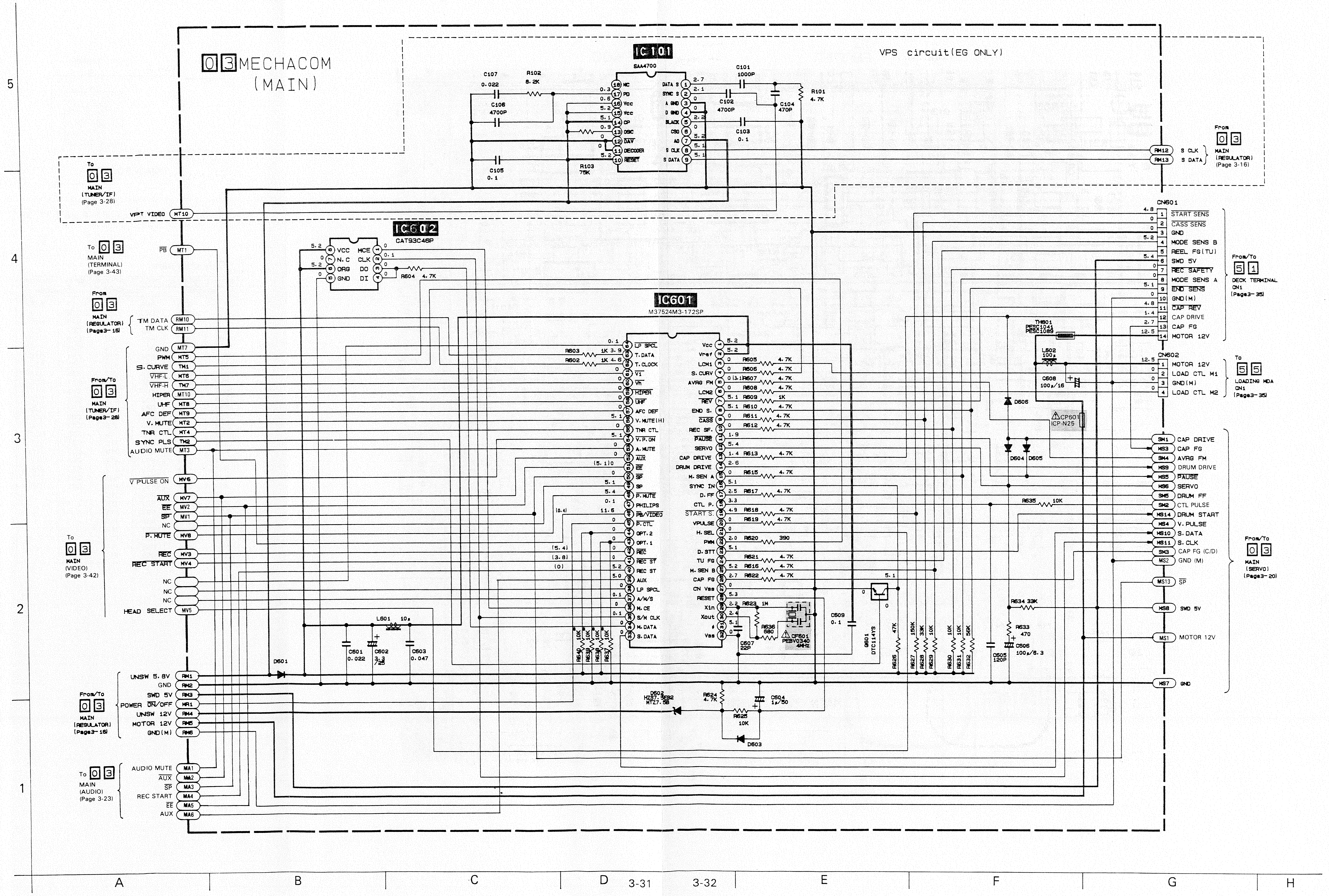

TNR/IF
MAIN BOARD

MAIN board assembly is located in Page 3-37, 38

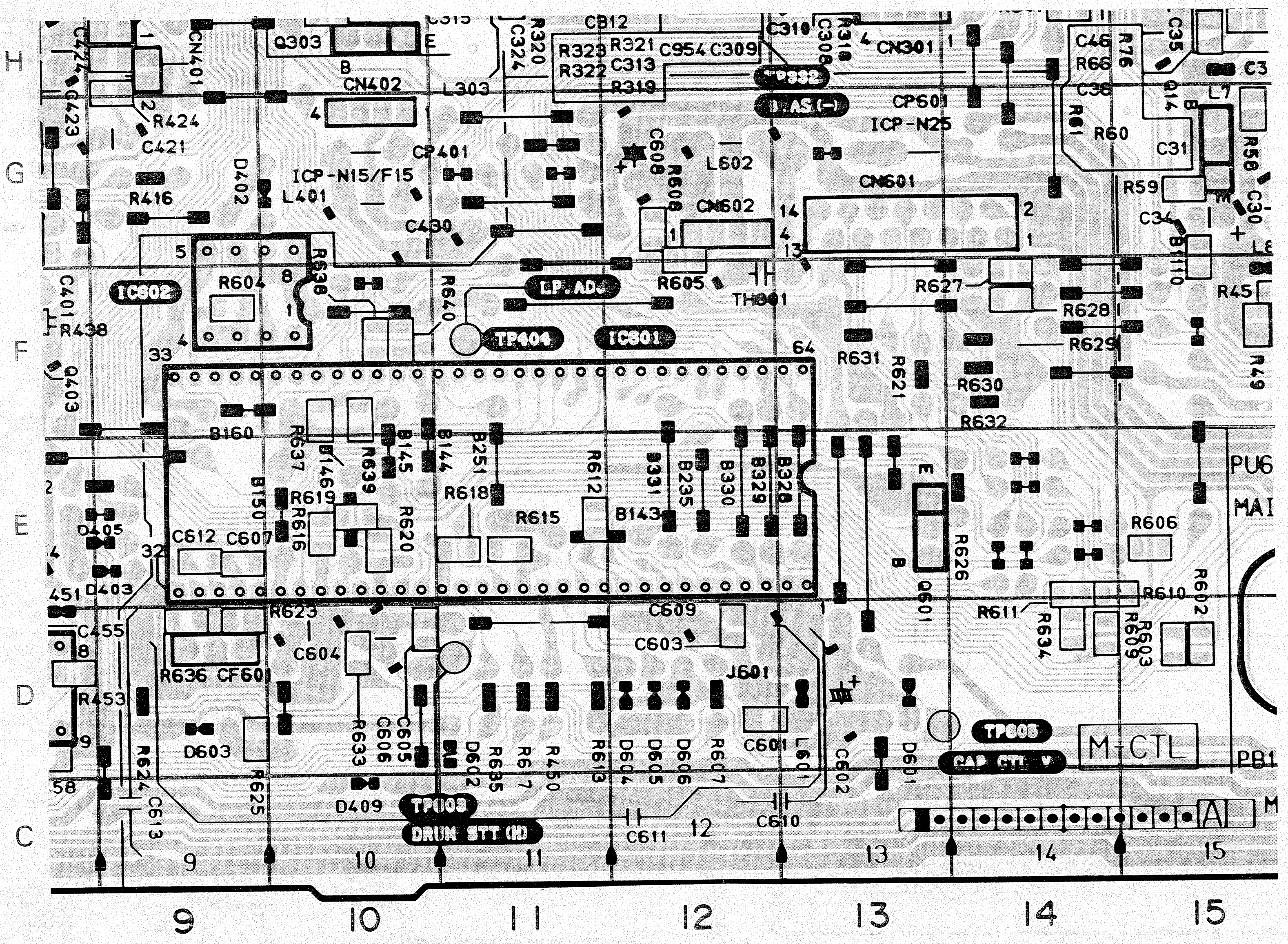
· Only chip parts

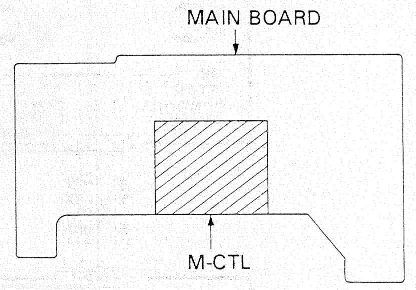
REF No.	LOCATION	REF No.	LOCATION	REF No.	LOCATION
RESISTOR		RESISTOR		CAPACITOR	
R3	G20	R46	H16	C17	F19
R6	J20	R47	G7	C18	F19
R7	I19	R48	H18	C22	H17
R8	I19	R50	I16	C27	G17
R9	I20	R51	I16	C29	G17
R10	I20	R53	J16	C31	H16
R13	I20	R54	J16	C54	G18
R14	I20	R55	J16	C55	F18
R15	H20	R56	J17	C56	G18
R17	E20	R60	H15	C57	F18
R18	E20	R61	H15	C64	H17
R19	I18	R62	H15	C66	F17
R20	I18	R63	I15	C67	G16
R21	J18	R64	H15	C69	H16
R22	J18	R65	I15	C73	I17
R23	J18	R68	I15	C79	H17
R24	J18	R70	I18	C81	E19
R25	I19	R71	I18	C82	J15
R31	E19	R72	I17	C83	J17
R32	F19	R73	I17	C84	I19
R33	G18	R80	G20	C86	I15
R35	E19	R81	F16	C91	H16
R36	E18	R83	I18		
R38	H17	R84	I18		
R39	H18	R87	I15		
R41	G17	R88	I15		
R42	F17	R91	I19		
R43	G17	R93	F20		
R44	F16	R96	I19		
R45	F15	R99	F17		

3.17 MECHACON SCHEMATIC DIAGRAM


03 MECHACOM (MAIN)
VPS circuit(EG ONLY)
IC101
SAA4700
IC602
CAT93C46P
IC601
M37524M3-172SP
CN601
CN602
To 03 MAIN (TUNER/IF) (Page 3-28)
VPT VIDEO MT10
To 03 MAIN (TERMINAL) (Page 3-43)
PB MT1
From 03 MAIN (REGULATOR) (Page3-16)
TM DATA RM10
TM CLK RM11
From/To 03 MAIN (TUNER/IF) (Page3-28)
GND MT7
PWM MT5
S.CURVE TM1
VHF-L MT6
VHF-H MT7
HIPER MT10
UHF MT8
AFC DEF MT9
V.MUTE MT2
TNR CTL MT4
SYNC PLS TM2
AUDIO MUTE MT3
To 03 MAIN (VIDEO) (Page 3-42)
V PULSE ON MV6
AUX MV7
EE MV2
SP MV1
NC
P.MUTE MV8
REC MV3
REC START MV4
HEAD SELECT MV5
From/To 03 MAIN (REGULATOR) (Page3-16)
UNSW 5.8V RM1
GND RM2
SWD 5V RM3
POWER ON/OFF MR1
UNSW 12V RM4
MOTOR 12V RM5
GND(M) RM6
To 03 MAIN (AUDIO) (Page 3-23)
AUDIO MUTE MA1
AUX MA2
SP MA3
REC START MA4
EE MA5
AUX MA6
From 03 MAIN (REGULATOR) (Page 3-16)
S CLK RM12
S DATA RM13
From/To 51 DECK TERMINAL CN1 (Page3-35)
START SENS
CASS SENS
GND
MODE SENS B
REEL FG(TU)
SWD 5V
REC SAFETY
MODE SENS A
END SENS
GND(M)
CAP REV
CAP DRIVE
CAP FG
MOTOR 12V
To 55 LOADING MDA CN1 (Page3-35)
MOTOR 12V
LOAD CTL M1
GND(M)
LOAD CTL M2
From/To 03 MAIN (SERVO) (Page3-20)
CAP DRIVE SM1
CAP FG MS3
AVRG FM SM4
DRUM DRIVE MS9
PAUSE MS5
SERVO MS6
DRUM FF SM5
CTL PULSE SM2
DRUM START MS14
V.PULSE MS4
S.DATA MS10
S.CLK MS11
CAP FG (C/D) SM3
GND (M) MS2
SP MS13
SWD 5V MS8
MOTOR 12V MS1
GND MS7
TH601 PESC1041 PESC1089
L602 100μ
C608 100μ/16
D606
D604 D605
ICP601 ICP-N25
CF601 PEBV0340 4MHz
Q601 DTC114YS
L601 10μ
D601
D602 HZ27.5EB2 MTZ27.5B
D603
C601 0.022
C602 3.3/25
C603 0.047
C604 1μ/50
C605 120P
C606 100μ/6.3
C609 0.1
C607 22P
R601 4.7K
R102 8.2K
R103 75K
C101 1000P
C102 4700P
C103 0.1
C104 470P
C105 0.1
C106 4700P
C107 0.022
R604 4.7K
R634 33K
R633 470
R635 10K
R623 1M
R636 680
R624 4.7K
R625 10K
1
2
3
4
5
A
B
C
D
E
F
G
H

3.18 MEC HACON (MAIN) CIRCUIT BOARD


H
G
F
E
D
C
9
10
11
12
13
14
15
CN401
Q303
CN402
L303
C315
R320
C324
C812
R323
R321
R322
C313
R319
C954
C309
C310
C318
C308
CN301
TP332
D.AS (-)
CP601
ICP-N25
C46
R66
R76
C35
C36
C3
L7
R61
R60
C31
R58
R59
C34
C30
R424
C421
D402
ICP-N15/F15
L401
CP401
C430
C608
R608
L602
CN602
CN601
R416
IC602
R604
R638
R640
LP. ADJ
R605
TH601
R627
R628
R629
R45
R49
C401
R438
Q403
TP404
IC601
R631
R621
R630
R632
B160
R637
B146
R639
B145
B144
B251
R612
B331
B235
B330
B329
B328
R619
R616
R620
R618
R615
B143
B150
Q601
R626
R606
R610
R602
PU6
MAI
D405
D403
C612
C607
R611
R634
R603
R609
C455
R453
R623
C604
R636
CF601
C609
C603
J601
TP605
CAP CTL V
M-CTL
PB1
D603
R633
C606
C605
D602
R635
R617
R450
R613
D604
D605
D606
R607
C601
L601
C602
D601
R624
R625
C613
D409
TP603
DRUM STT (H)
C611
C610
A

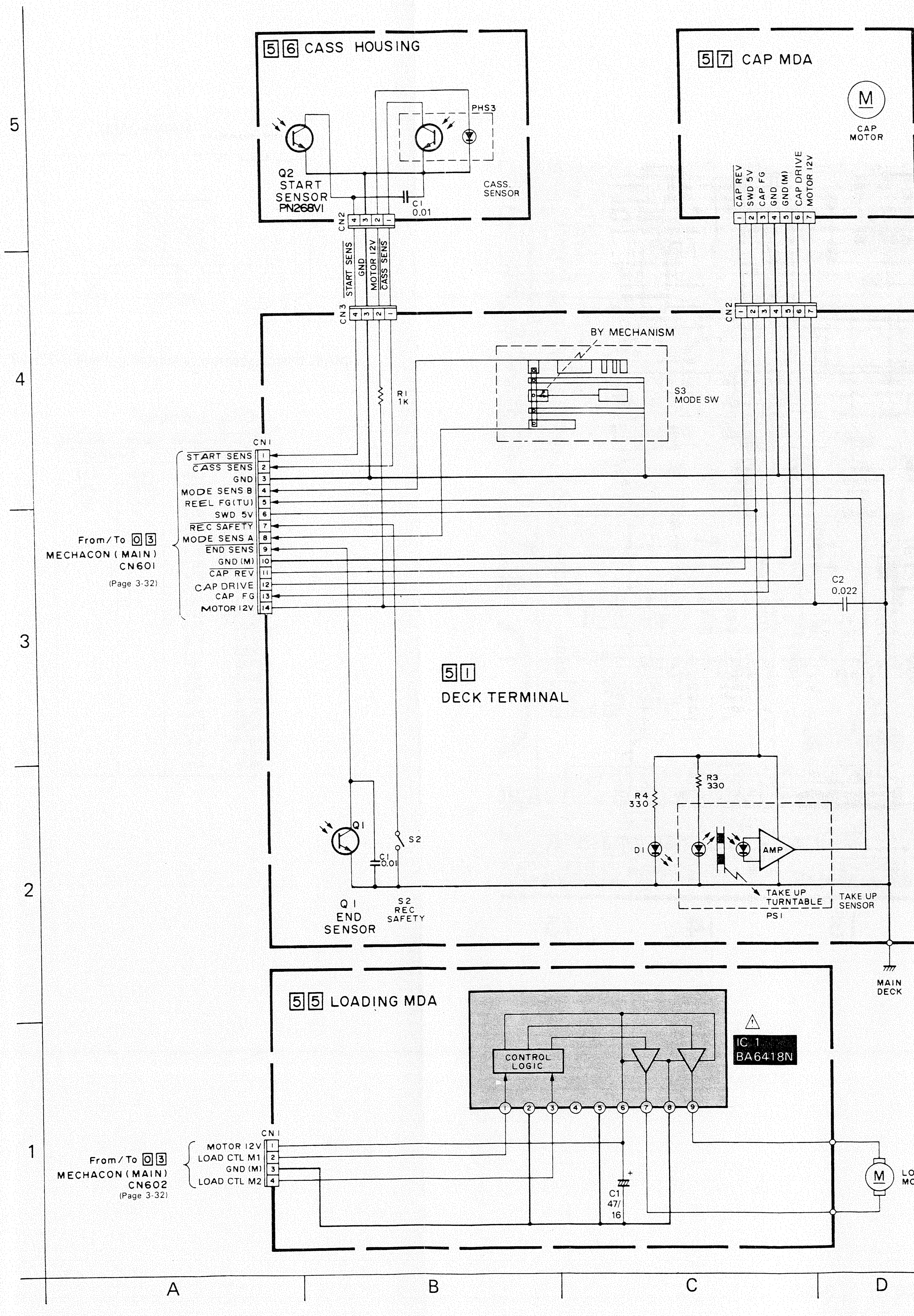

MAIN BOARD
M-CTL

MAIN board assembly is located in Page 3-37, 38

· Only chip parts

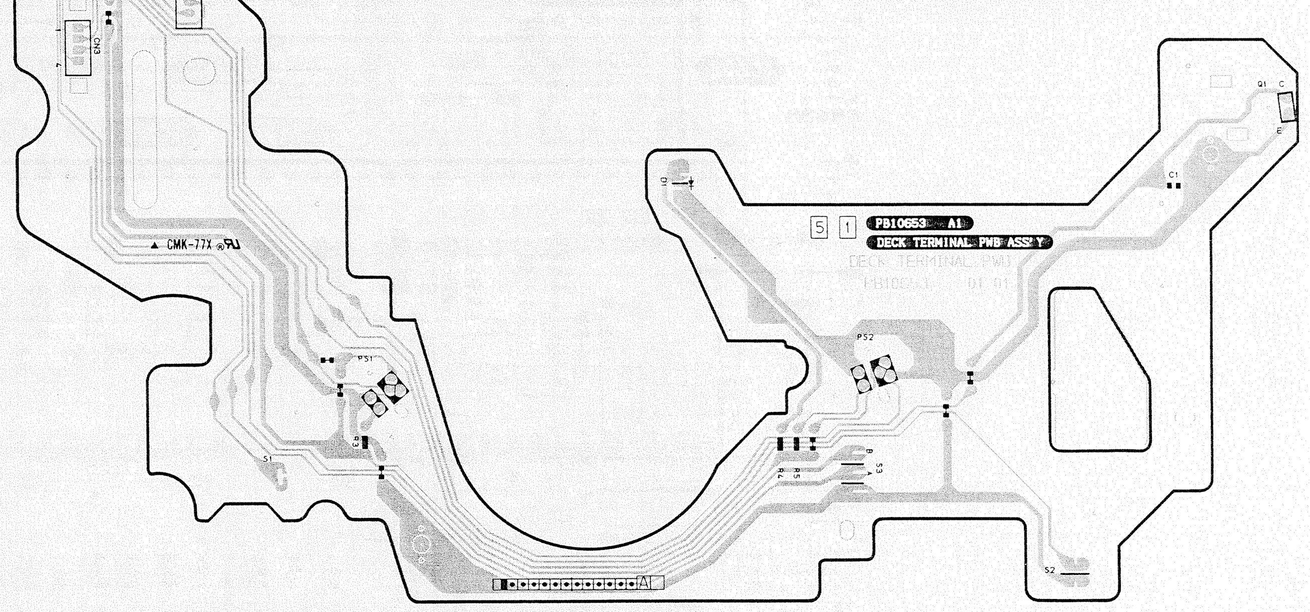
REF No.	LOCATION	REF No.	LOCATION
RESISTOR		CAPACITOR	
R602	D15	C601	D12
R603	D15	C605	D10
R604	F9	C607	E9
R605	G12		
R606	E15		
R608	G12		
R609	D14		
R610	E15		
R611	E14		
R612	E11		
R615	E11		
R616	E10		
R618	E11		
R619	E10		
R620	E10		
R623	D9		
R625	D9		
R627	F14		
R628	F14		
R633	D10		
R634	D14		
R636	D9		
R637	F10		
R639	F10		

3.19 DECK TERMINAL, CASS. HOUSING, CAPSTAN MDA AND LOADING MDA SCHEMATIC DIAGRAMS

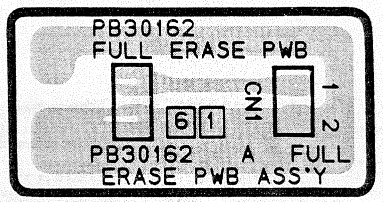

5 6 CASS HOUSING
Q2 START SENSOR PN268VI
PHS3
CASS. SENSOR
C1 0.01
CN2
START SENS
GND
MOTOR 12V
CASS SENS
CN3
5 7 CAP MDA
CAP MOTOR
CAP REV
SWD 5V
CAP FG
GND
GND (M)
CAP DRIVE
MOTOR 12V
BY MECHANISM
S3 MODE SW
R1 1K
CN1
START SENS
CASS SENS
GND
MODE SENS B
REEL FG(TU)
SWD 5V
REC SAFETY
MODE SENS A
END SENS
GND (M)
CAP REV
CAP DRIVE
CAP FG
MOTOR 12V
From/To 0 3 MECHACON (MAIN) CN601 (Page 3-32)
C2 0.022
5 1 DECK TERMINAL
R4 330
R3 330
D1
AMP
Q1
C1 0.01
S2
Q1 END SENSOR
S2 REC SAFETY
TAKE UP TURNTABLE
PS1
TAKE UP SENSOR
MAIN DECK
5 5 LOADING MDA
CONTROL LOGIC
IC 1 BA6418N
From/To 0 3 MECHACON (MAIN) CN602 (Page 3-32)
MOTOR 12V
LOAD CTL M1
GND (M)
LOAD CTL M2
C1 47/16
LOADING MOTOR
A
B
C
D
1
2
3
4
5

3.20 DECK TERMINAL, LOADING MDA, CASS. HOUSING, A/CTL HEAD AND FULL ERASE HEAD CIRCUIT BOARDS

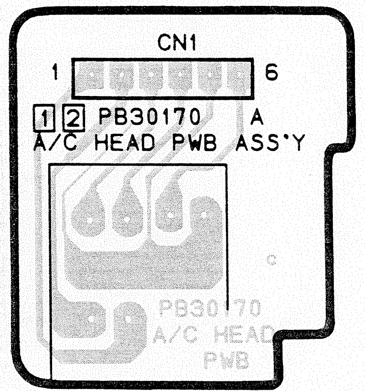
—DECK TERMINAL—


CN4
CN2
CN3
CMK-77X
PS1
PS2
S1
S2
S3
D1
Q1
C1
5 1 PB10653 A1
DECK TERMINAL PWB ASS'Y

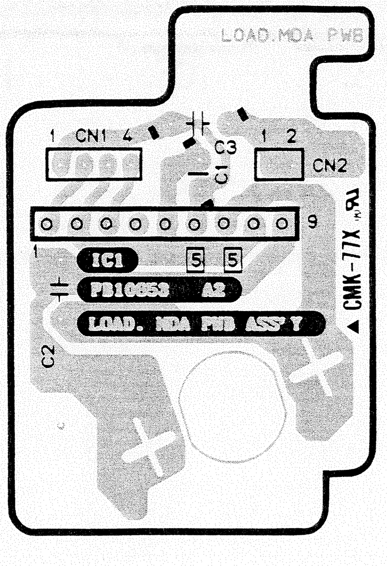
—FULL ERASE HEAD—


PB30162
FULL ERASE PWB
CN1
1
2
6 1
PB30162 A FULL ERASE PWB ASS'Y

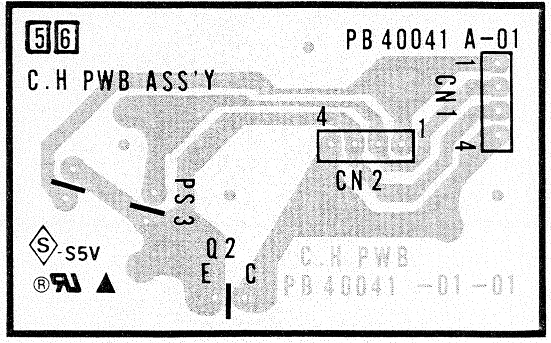
—A/CTL HEAD—


CN1
1
6
1 2 PB30170 A
A/C HEAD PWB ASS'Y
PB30170
A/C HEAD PWB

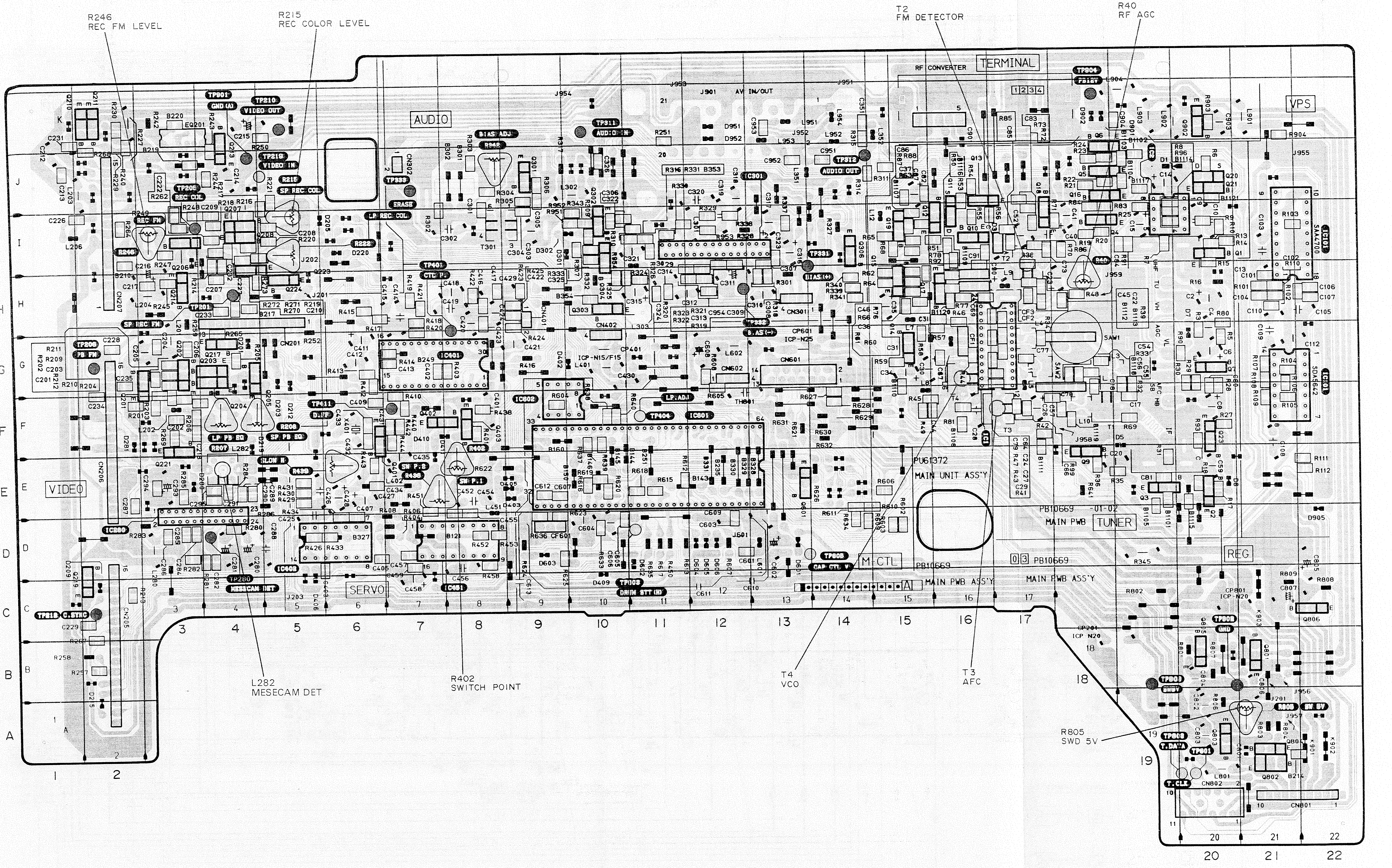
—LOADING MDA—


LOAD.MDA PWB
1 CN1 4
C3
C1
1 2
CN2
9
1
IC1
5 5
PB10653 A2
LOAD. MDA PWB ASS'Y
CMK-77X
C2

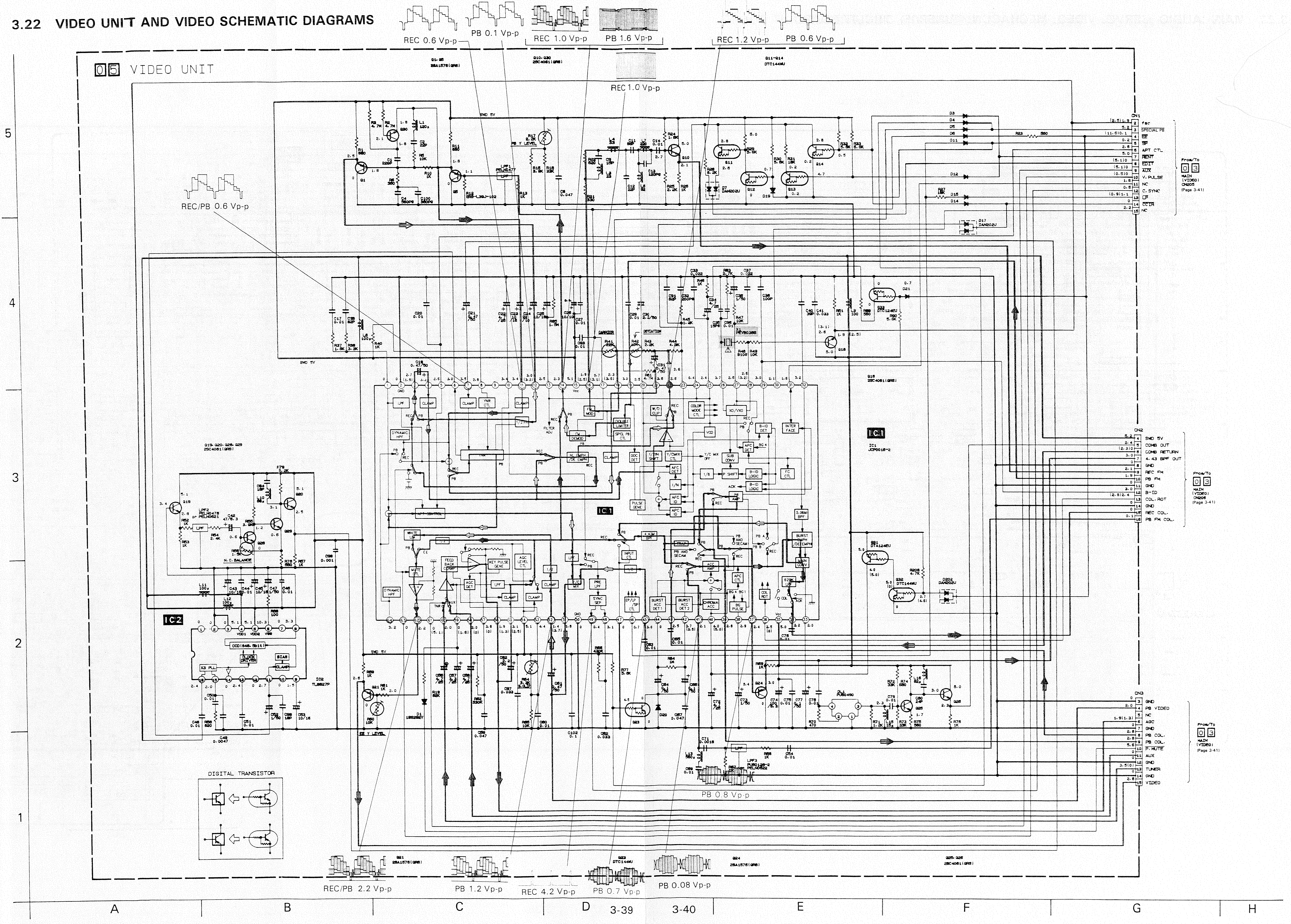
—CASSETTE HOUSING—

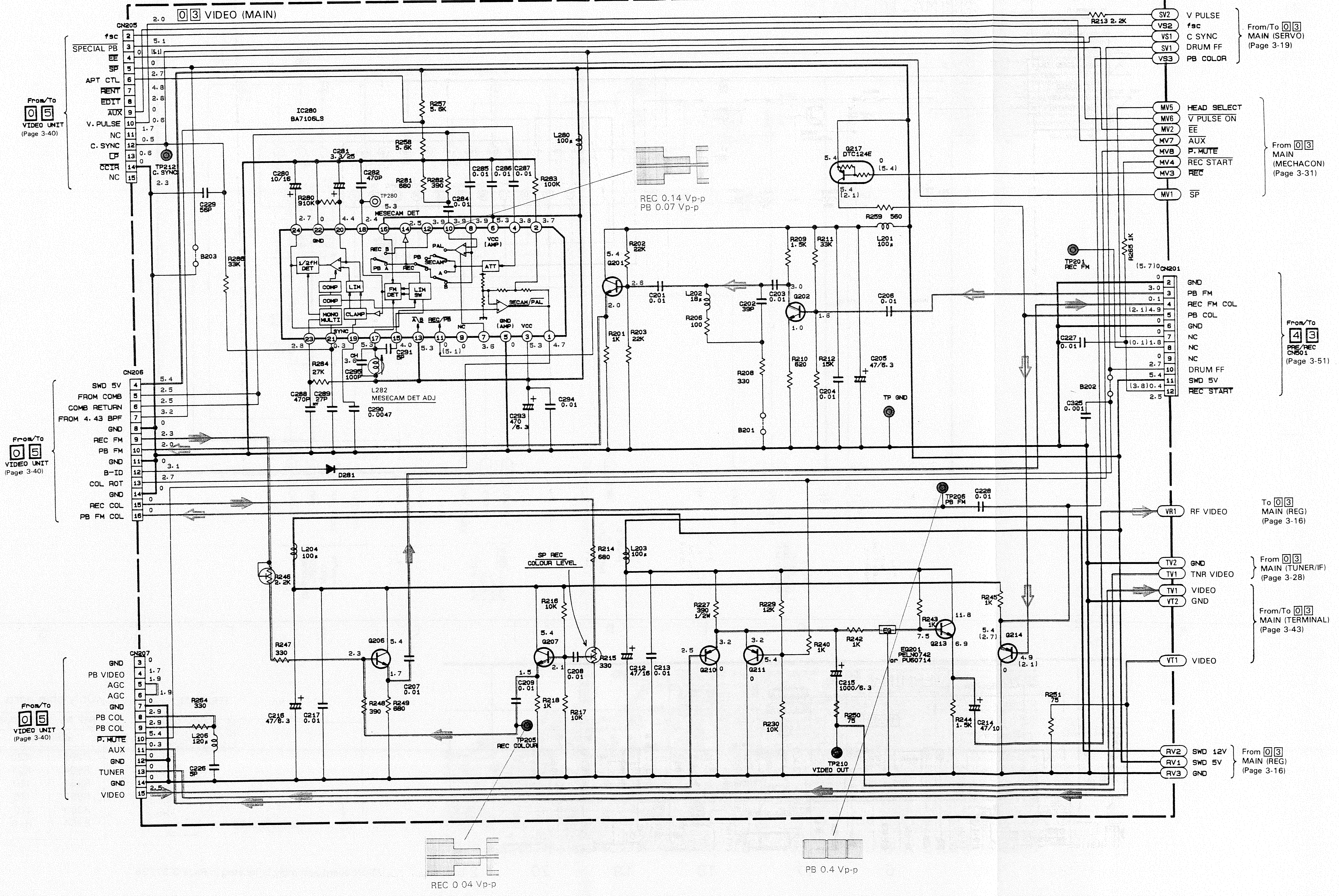

5 6
C.H PWB ASS'Y
PB40041 A-01
CN1
1
4
CN2
PS3
Q2
E C
S5V
C.H PWB
PB40041 -01-01

3.21 MAIN (AUDIO, SERVO, VIDEO, MECHACON, TUNER/IF) CIRCUIT BOARD

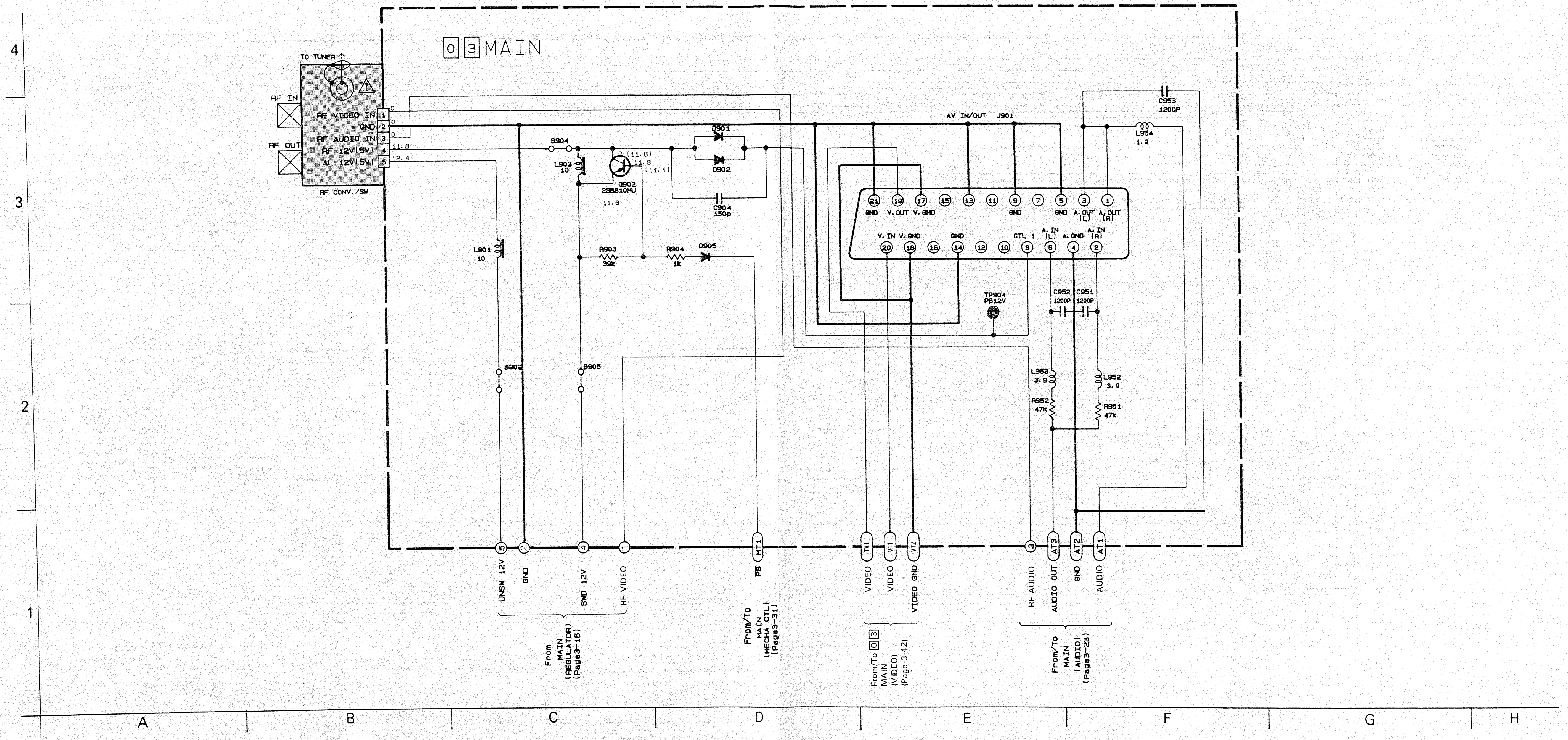

R246
REC FM LEVEL
R215
REC COLOR LEVEL
T2
FM DETECTOR
R40
RF AGC
AUDIO
TERMINAL
RF CONVERTER
VPS
VIDEO
SERVO
M-CTL
TUNER
REG
PU61372
MAIN UNIT ASS'Y
PB10669 -01-02
MAIN PWB
MAIN PWB ASS'Y
L282
MESECAM DET
R402
SWITCH POINT
T4
VCO
T3
AFC
R805
SWD 5V
K
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

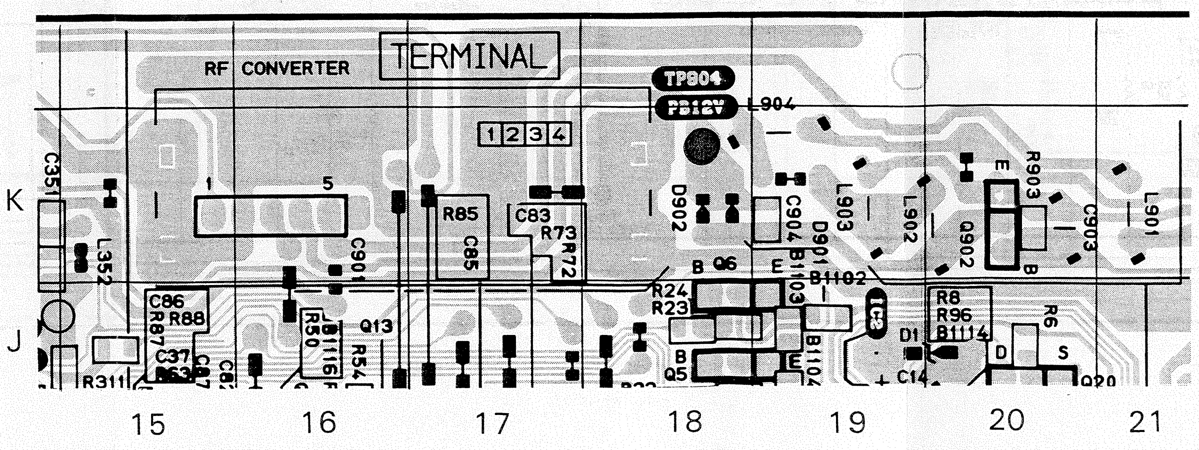
3.22 VIDEO UNIT AND VIDEO SCHEMATIC DIAGRAMS

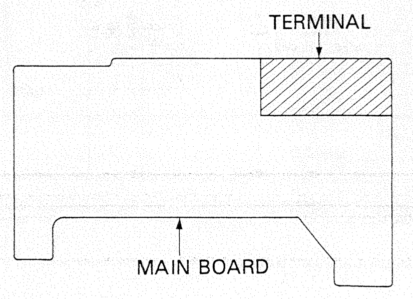

REC 0.6 Vp-p
PB 0.1 Vp-p
REC 1.0 Vp-p
PB 1.6 Vp-p
REC 1.0 Vp-p
REC 1.2 Vp-p
PB 0.6 Vp-p
05 VIDEO UNIT
Q1-Q5
2SA1576(QRS)
Q10-Q30
2SC4081(QRS)
Q11-Q14
DTC144WU
REC/PB 0.6 Vp-p
SWD 5V
PB Y LEVEL
CARRIER
DEVIATION
IC1
IC1
JCP0018-2
IC2
TL8827P
Q19, Q20, Q26, Q29
2SC4081(QRS)
N.C. BALANCE
CCD(648-Bit)
CLOCK DRIVER
BIAS
CLAMP
X3 PLL
PB Y LEVEL
DIGITAL TRANSISTOR
D3
D4
D5
D6
D11
D12
D15
D14
D17
DA202U
D21
D202
DA202U
CN1
2 fsc
3 SPECIAL PB
4 EE
5 SP
6 APT CTL
7 RENT
8 EDIT
9 AUX
10 V. PULSE
11 NC
12 C. SYNC
13 CP
14 CCIR
15 NC
From/To
03
MAIN (VIDEO) CN205
(Page 3-41)
CN2
4 SWD 5V
5 COMB OUT
6 COMB RETURN
7 4.43 BPF OUT
8 GND
9 REC FM
10 PB FM
11 GND
12 B-ID
13 COL. ROT
14 GND
15 REC COL.
16 PB FM COL.
From/To
03
MAIN (VIDEO) CN206
(Page 3-41)
CN3
3 GND
4 PB VIDEO
5 NC
6 AGC
7 GND
8 PB COL.
9 PB COL.
10 P. MUTE
11 AUX
12 GND
13 TUNER
14 GND
15 VIDEO
From/To
03
MAIN (VIDEO)
(Page 3-41)
PB 0.8 Vp-p
Q21
2SA1576(QRS)
Q23
DTC144WU
Q24
2SA1576(QRS)
Q25, Q26
2SC4081(QRS)
REC/PB 2.2 Vp-p
PB 1.2 Vp-p
REC 4.2 Vp-p
PB 0.7 Vp-p
PB 0.08 Vp-p
1
2
3
4
5
A
B
C
D
E
F
G
H


03 VIDEO (MAIN)
CN205
fsc
SPECIAL PB
EE
SP
APT CTL
RENT
EDIT
AUX
V. PULSE
NC
C. SYNC
LP
CCIR
NC
From/To 05 VIDEO UNIT (Page 3-40)
TP212 C. SYNC
C229 56P
B203
R286 33K
IC280 BA7106LS
C280 10/16
R280 910K
C281 3.3/25
C282 470P
TP280
R281 680
R282 390
R257 5.6K
R258 5.6K
C285 0.01
C286 0.01
C287 0.01
R283 100K
C284 0.01
L280 100µ
MESECAM DET
1/2fH DET
COMP
LIM
FM DET
LIM SW
MONO MULTI
CLAMP
REC B
PB A
PAL
SECAM
ATT
SECAM/PAL
VCC (AMP)
GND (AMP)
SYNC
REC/PB
R284 27K
C295 100P
C291 5P
C288 470P
C289 27P
C290 0.0047
L282 MESECAM DET ADJ
C293 470/6.3
C294 0.01
CN206
SWD 5V
FROM COMB
COMB RETURN
FROM 4.43 BPF
GND
REC FM
PB FM
GND
B-ID
COL ROT
GND
REC COL
PB FM COL
From/To 05 VIDEO UNIT (Page 3-40)
D281
REC 0.14 Vp-p
PB 0.07 Vp-p
Q217 DTC124E
R259 560
L201 100µ
R202 22K
Q201
C201 0.01
L202 18µ
R206 100
C202 39P
C203 0.01
Q202
R209 1.5K
R211 33K
C206 0.01
R201 1K
R203 22K
R208 330
R210 820
R212 15K
C204 0.01
C205 47/6.3
B201
TP GND
TP201 REC FM
R265 1K
CN201
GND
PB FM
REC FM COL
PB COL
GND
NC
NC
NC
DRUM FF
SWD 5V
REC START
C227 0.01
C325 0.001
B202
From/To 43 PRE/REC CN501 (Page 3-51)
R213 2.2K
SV2 V PULSE
VS2 fsc
VS1 C SYNC
SV1 DRUM FF
VS3 PB COLOR
From/To 03 MAIN (SERVO) (Page 3-19)
MV5 HEAD SELECT
MV6 V PULSE ON
MV2 EE
MV7 AUX
MV8 P. MUTE
MV4 REC START
MV3 REC
MV1 SP
From 03 MAIN (MECHACON) (Page 3-31)
TP206 PB FM
C228 0.01
VR1 RF VIDEO
To 03 MAIN (REG) (Page 3-16)
TV2 GND
TV1 TNR VIDEO
From 03 MAIN (TUNER/IF) (Page 3-28)
TV1 VIDEO
VT2 GND
From/To 03 MAIN (TERMINAL) (Page 3-43)
VT1 VIDEO
RV2 SWD 12V
RV1 SWD 5V
RV3 GND
From 03 MAIN (REG) (Page 3-16)
L204 100µ
R246 2.2K
R247 330
Q206
R248 390
R249 680
C207 0.01
C216 47/6.3
C217 0.01
SP REC COLOUR LEVEL
R214 680
R216 10K
Q207
C208 0.01
R215 330
C209 0.01
R218 1K
R217 10K
TP205 REC COLOUR
L203 100µ
C212 47/16
C213 0.01
R227 390 1/2W
Q210
R229 12K
Q211
R230 10K
R240 1K
R242 1K
EQ
EQ201 PELN0742 or PU60714
C215 1000/6.3
R250 75
TP210 VIDEO OUT
R243 1K
Q213
R244 1.5K
C214 47/10
R245 1K
Q214
R251 75
CN207
GND
PB VIDEO
AGC
AGC
GND
PB COL
PB COL
P. MUTE
AUX
GND
TUNER
GND
VIDEO
From/To 05 VIDEO UNIT (Page 3-40)
R264 330
L206 120µ
C226 5P
REC 0.04 Vp-p
PB 0.4 Vp-p

3.23 TERMINAL SCHEMATIC DIAGRAM & TERMINAL CIRCUIT BOARD


0 3 MAIN
TO TUNER
RF IN
RF OUT
RF VIDEO IN 1
GND 2
RF AUDIO IN 3
RF 12V(5V) 4
AL 12V(5V) 5
RF CONV./SW
B904
L903 10
Q902 2SB810HJ
11.8
D901
D902
C904 150p
L901 10
R903 39k
R904 1k
D905
AV IN/OUT J901
C953 1200P
L954 1.2
GND
V.OUT
V.GND
A.OUT (L)
A.OUT (R)
V.IN
CTL 1
A.IN (L)
A.GND
A.IN (R)
TP904 PB12V
C952 1200P
C951 1200P
L953 3.9
L952 3.9
R952 47k
R951 47k
B902
B905
UNSW 12V
GND
SWD 12V
RF VIDEO
PB
From MAIN (REGULATOR) (Page3-16)
From/To MAIN (MECHA CTL) (Page3-31)
VIDEO
VIDEO
VIDEO GND
From/To 0 3 MAIN (VIDEO) (Page 3-42)
RF AUDIO
AUDIO OUT
GND
AUDIO
From/To MAIN (AUDIO) (Page3-23)
1
2
3
4
A
B
C
D
E
F
G
H


RF CONVERTER
TERMINAL
TP904
PB12V
L904
1 2 3 4
R903
C903
L901
L902
Q902
D901
L903
C904
D902
Q6
R85
C83
C85
R73
R72
C90
Q13
R50
R54
C86
R88
R87
C37
R311
L352
C35
R24
R23
Q5
B1102
B1103
D1
C14
R8
R96
B1114
R6
K
J
15
16
17
18
19
20
21


TERMINAL
MAIN BOARD

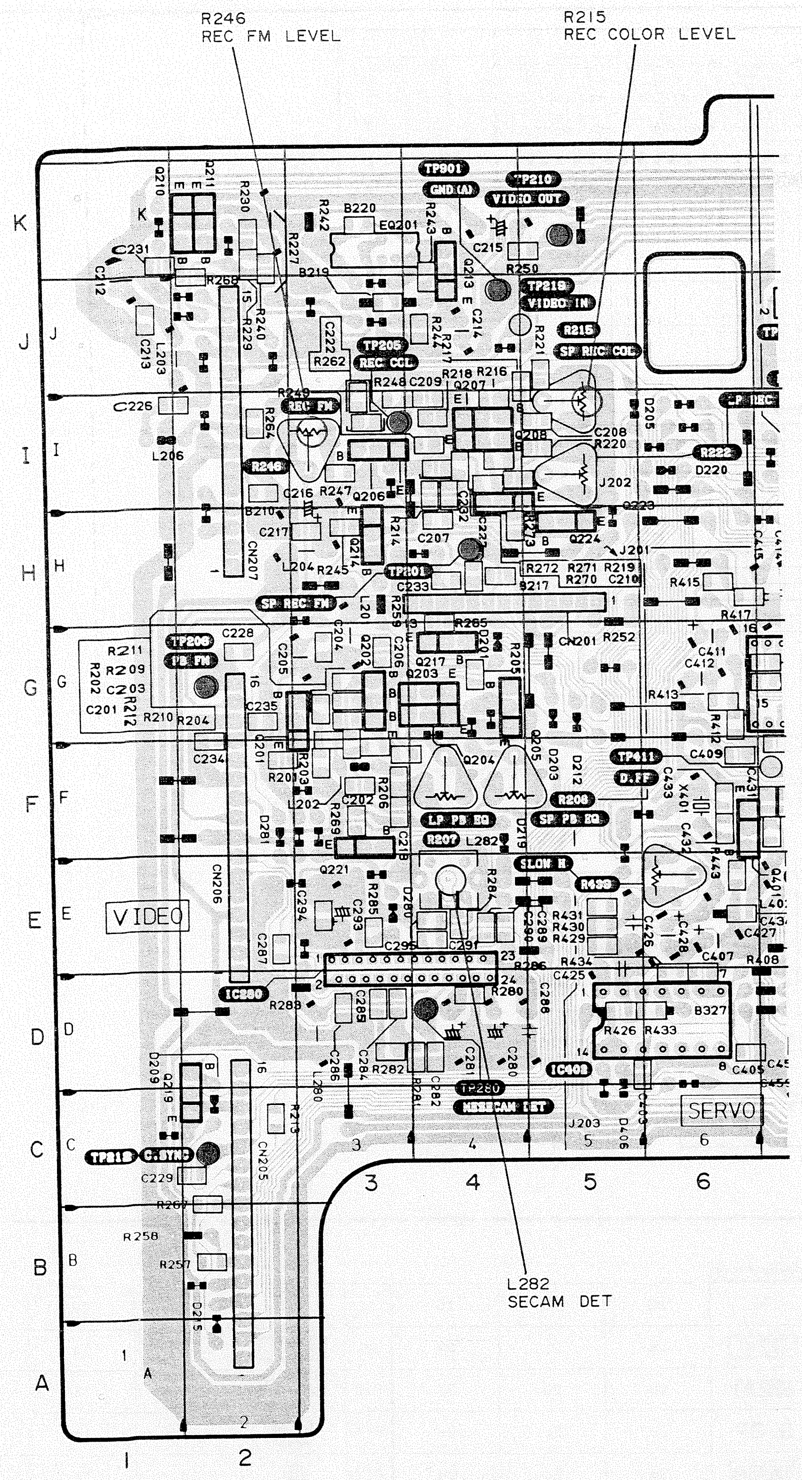
MAIN board assembly is located in Page 3-37, 38

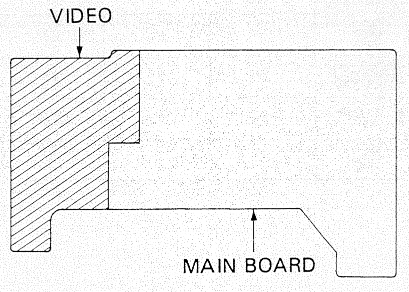
·Only chip parts

REF No.	LOCATION
RESISTOR	
R903	K20
R904	K21
R951	I10
R952	I10
R953	I12
R954	H10

3.24 VIDEO (MAIN) AND VIDEO UNIT CIRCUIT BOARDS

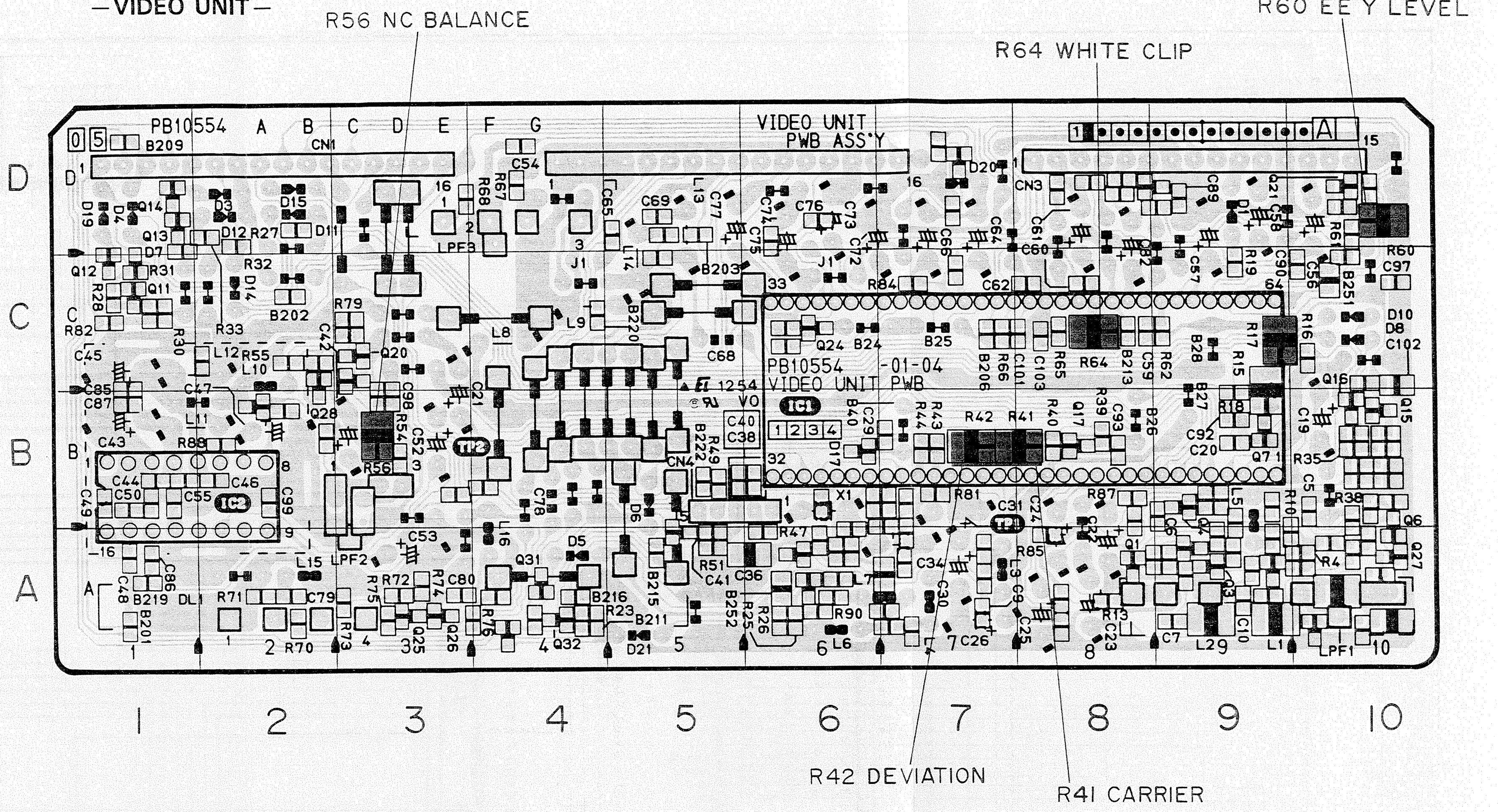
—VIDEO (MAIN)—





MAIN board assembly is located in Page 3-37, 38

—VIDEO UNIT—



REF No.	LOCATION
IC	
IC1	B 9
IC2	B 1
TRANSISTOR	
Q1	A 8
Q3	A 9
Q4	B 9
Q5	A 10
Q6	B 10
Q7	B 9
Q10	A 6
Q11	C 1
Q12	D 1
Q13	D 1
Q14	D 1
Q15	C 10
Q16	C 10
Q17	B 8
Q18	B 5
Q19	C 2
Q20	C 3
Q21	D 10

REF No.	LOCATION
TRANSISTOR	
Q22	D 9
Q23	D 7
Q24	C 6
Q25	A 3
Q26	A 3
Q27	A 10
Q28	C 2
Q29	C 3
Q30	B 9
Q31	A 4
Q32	A 4
DIODE	
D1	D 9
D3	D 2
D4	D 1
D5	A 4
D6	B 5
D7	D 1
D8	C 10
D10	C 10
D11	D 2

REF No.	LOCATION
DIODE	
D12	D 2
D14	D 2
D15	D 2
D17	B 6
D19	D 1
D20	D 7
D202	A 4
COIL	
L1	A 9
L2	B 9
L2	A 9
L3	A 7
L4	A 7
L6	A 6
L7	A 6
L8	C 4
L9	C 4
L10	C 2
L11	B 1
L12	C 1
L13	D 5

REF No.	LOCATION
COIL	
L14	C 5
L15	A 2
L16	A 4
OTHER	
LPF1	A 9
LPF2	B 3
LPF3	D 3
RESISTOR	
R1	B 8
R2	A 9
R3	A 9
R4	A 10
R5	A 9
R6	B 9
R7	B 10
R8	A 10
R9	A 9
R10	B 10
R11	A 10

REF No.	LOCATION
RESISTOR	
R12	A 10
R13	A 8
R14	B 10
R15	C 9
R16	C 10
R17	C 9
R18	C 9
R19	D 9
R20	A 9
R21	B 7
R22	A 7
R23	A 4
R24	A 6
R25	A 6
R26	A 6
R27	D 2
R28	C 1
R29	C 1
R30	C 1
R31	D 1
R32	D 2
R33	D 2
R34	B 10

REF No.	LOCATION
RESISTOR	
R35	B 10
R36	C 10
R37	B 10
R38	B 10
R39	B 8
R40	B 8
R41	B 8
R42	B 7
R43	B 7
R44	B 7
R45	B 7
R46	B 7
R47	B 6
R48	B 6
R49	B 5
R50	B 4
R51	B 5
R52	B 2
R53	C 2
R54	B 3
R55	C 2
R56	B 3
R57	C 3

REF No.	LOCATION
RESISTOR	
R58	B 1
R59	D 10
R60	D 10
R61	D 10
R62	C 9
R63	D 9
R64	C 8
R65	C 8
R66	C 7
R67	D 4
R68	D 4
R69	C 6
R70	A 2
R71	A 2
R72	A 3
R73	A 3
R74	A 3
R75	A 3
R76	A 4
R77	D 7
R78	C 2
R79	C 3
R80	D 10

REF No.	LOCATION
RESISTOR	
R81	B 7
R82	C 1
R83	A 6
R84	C 7
R85	B 8
R87	B 8
R208	A 4
CAPACITOR	
C1	B 9
C2	A 9
C3	B 9
C4	B 9
C5	B 10
C6	B 9
C7	A 9
C8	A 7
C9	A 7
C10	A 9
C11	A 7
C12	A 7
C13	A 7

REF No.	LOCATION
CAPACITOR	
C14	A 6
C15	B 10
C16	B 10
C17	B 10
C18	B 10
C19	B 10
C20	B 9
C21	C 3
C22	A 8
C23	A 8
C24	A 8
C25	A 8
C26	A 7
C27	A 8
C29	B 7
C30	A 7
C31	B 7
C32	B 7
C33	B 7
C34	B 7
C35	A 6
C36	A 6
C37	B 6

REF No.	LOCATION
CAPACITOR	
C38	B 6
C40	B 6
C41	B 5
C42	C 3
C43	B 1
C44	B 1
C45	C 1
C46	B 2
C47	B 2
C48	A 1
C49	B 1
C50	B 1
C51	B 1
C52	B 3
C53	A 3
C54	D 4
C55	B 1
C56	D 10
C57	D 9
C58	D 9
C59	C 8
C60	C 8
C61	D 8

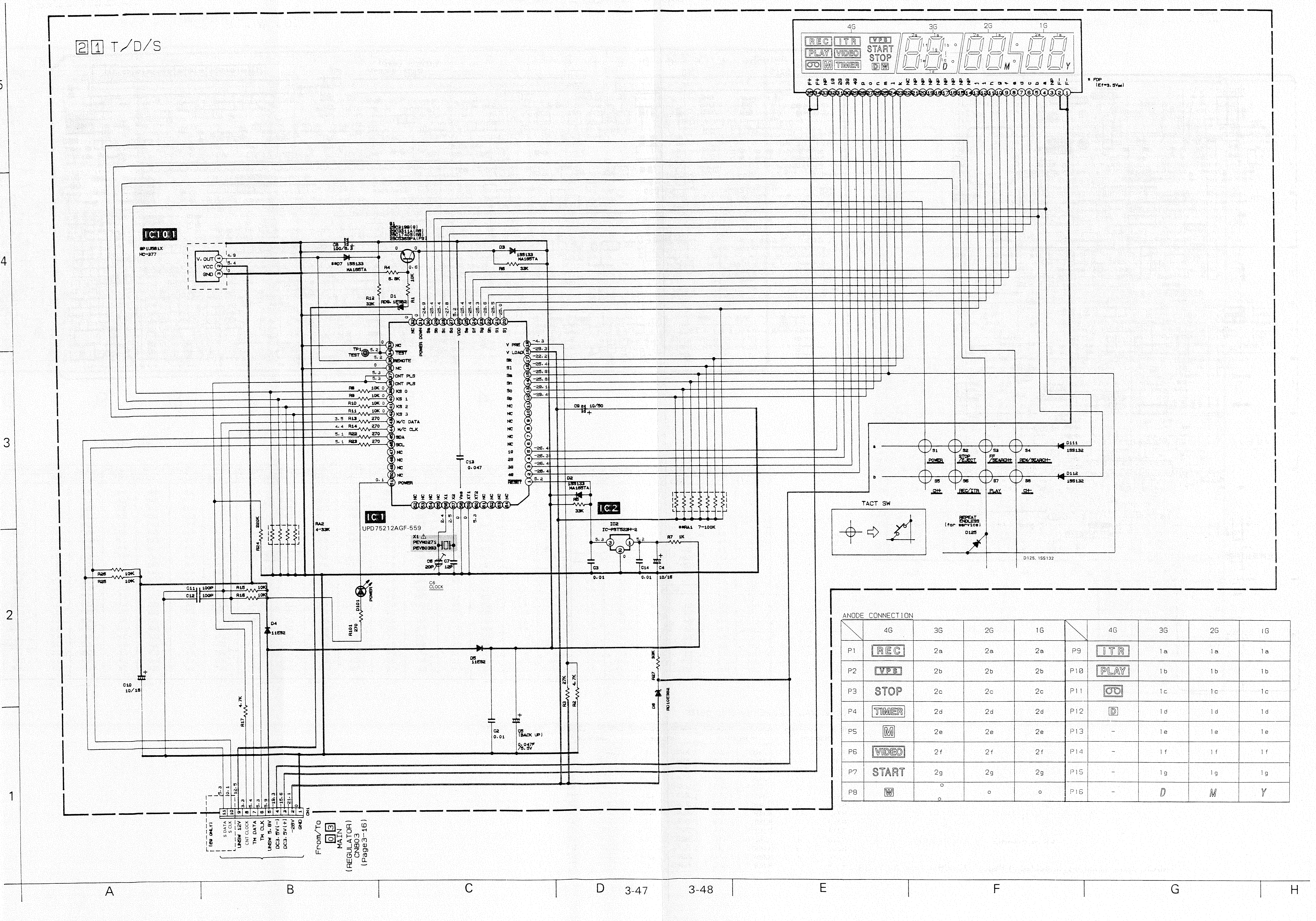
REF No.	LOCATION
CAPACITOR	
C62	C 8
C63	D 7
C64	D 7
C65	D 5
C66	D 7
C67	D 7
C68	C 5
C69	D 5
C70	D 5
C71	D 5
C72	D 7
C73	D 6
C74	D 6
C75	D 6
C76	D 6
C77	D 5
C78	B 4
C79	A 2
C80	A 3
C82	D 8
C83	C 2
C84	C 3
C85	C 1

REF No.	LOCATION
CAPACITOR	
C86	A 1
C87	C 1
C89	D 9
C90	D 10
C91	B 7
C92	B 9
C93	B 8
C94	B 10
C95	B 9
C96	B 6
C97	C 10
C98	C 3
C99	B 2
C100	B 9
C101	C 8
C102	C 10
C103	C 8
C104	D 10
CONNECTOR	
CN3	D 8
CN4	B 6

·Only chip parts

REF No.	LOCATION	REF No.	LOCATION	REF No.	LOCATION	REF No.	LOCATION
RESISTOR		RESISTOR		CAPACITOR		CAPACITOR	
R201	F2	R230	K2	C201	F3	C235	G2
R202	G3	R240	K2	C202	F2		
R203	F2	R243	J4	C203	G3		
R206	F3	R244	J4	C204	G3		
R209	G3	R245	H3	C206	G3		
R210	F3	R247	I3	C207	H4		
R211	G3	R248	I3	C208	I5		
R212	F3	R249	I4	C209	I4		
R213	C2	R250	K5	C213	J1		
R214	I4	R251	K11	C217	H3		
R216	I4	R257	B2	C226	I2		
R217	J5	R264	I2	C227	H4		
R218	I4	R265	G4	C228	G2		
R229	K2	R268	J2	C229	C2		

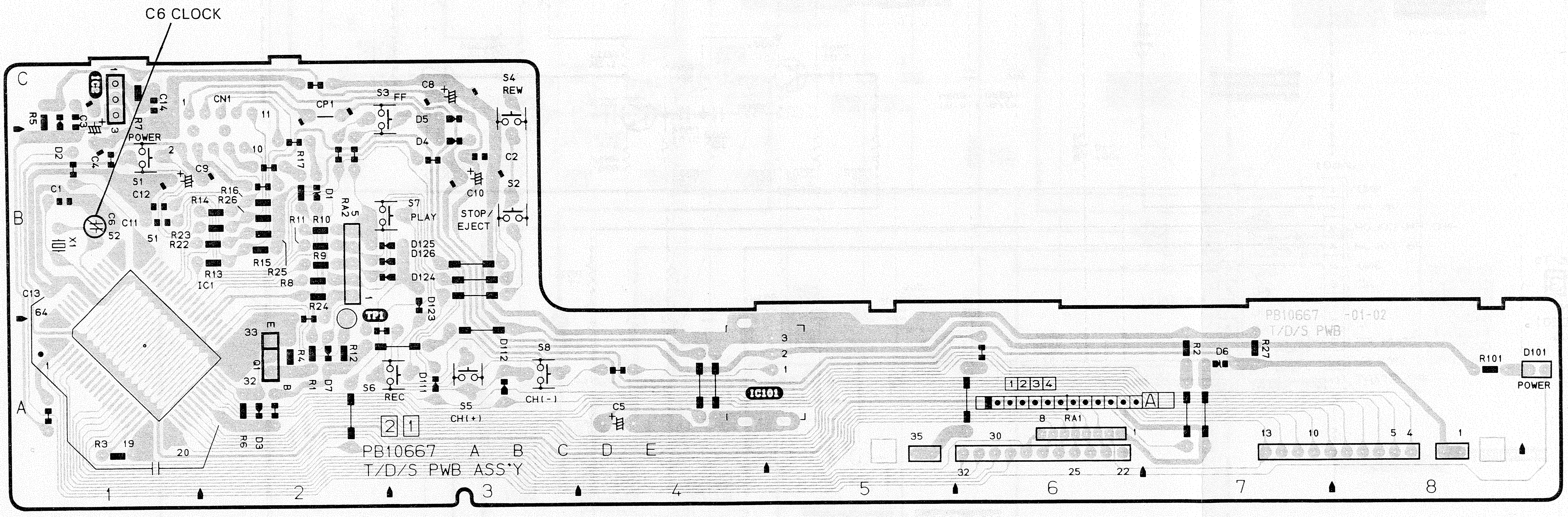
3.25 TIMER/DISPLAY/SWITCH SCHEMATIC DIAGRAM


21 T/D/S
REC
ITR
VPS
PLAY
VIDEO
START
STOP
TIMER
4G
3G
2G
1G
D
M
Y
FDP (Ef=3.5Vac)
IC101
SP1U581X
HC-377
V.OUT
VCC
GND
4.9
5.4
0
C8 100/6.3
**D7 1SS133 MA165TA
Q1
2SC3199(G)
2SC3311A(RS)
2SC1740S(RS)
2SC536SPA(FG)
R4 6.8K
R1 10K
0.6
D1 RD9.1ES82
R12 33K
D3 1SS133 MA165TA
R6 33K
TP1 TEST
NC
TEST
REMOTE
CNT PLS
KS 0
KS 1
KS 2
KS 3
M/C DATA
M/C CLK
SDA
SCL
POWER
POWER DOWN
Sa
Sb
Sc
Sd
VDD
Se
Sf
Sg
Sh
Si
Sj
V PRE
V LOAD
Sk
Sl
Sm
Sn
So
Sp
1G
2G
3G
4G
RESET
X1
X2
Vss
XT1
XT2
R8 10K
R9 10K
R10 10K
R11 10K
R13 270
R14 270
R22 270
R23 270
C13 0.047
IC1
UPD75212AGF-559
X1 ⚠
PEVM0271
PEVB0393
C5 20P
C7 12P
C6 CLOCK
C9 10/50
D2 1SS133 MA165TA
R5 33K
IC2
IC2 IC-PST523H-2
5.3
5.2
C3 0.01
C14 0.01
C4 10/16
R7 1K
**RA1 7-100K
RA2 4-33K
R24 220K
R25 10K
R26 10K
C11 100P
C12 100P
R15 10K
R16 10K
D4 11E82
C10 10/16
R17 4.7K
POWER
D101
R101 270
D5 11E82
C2 0.01
C8 (BACK UP) 0.047F /5.5V
R3 27K
R2 4.7K
R27 33K
D6 RD10ES82
S1 POWER
S2 STOP /EJECT
S3 FF /SEARCH+
S4 REW/SEARCH−
S5 CH+
S6 REC/ITR
S7 PLAY
S8 CH−
a
b
D111 1SS132
D112 1SS132
TACT SW
REPEAT ENDLESS (for service)
D125
D125, 1SS132
CN1
S DATA
S CLK
UNSW 12V
CNT CLOCK
TM DATA
TM CLK
UNSW 5.8V
DC3.5V(−)
DC3.5V(+)
−28V
GND
(EG ONLY)
From/To 03 MAIN (REGULATOR) CN803 (Page3-16)
A
B
C
D
E
F
G
H
1
2
3
4
5

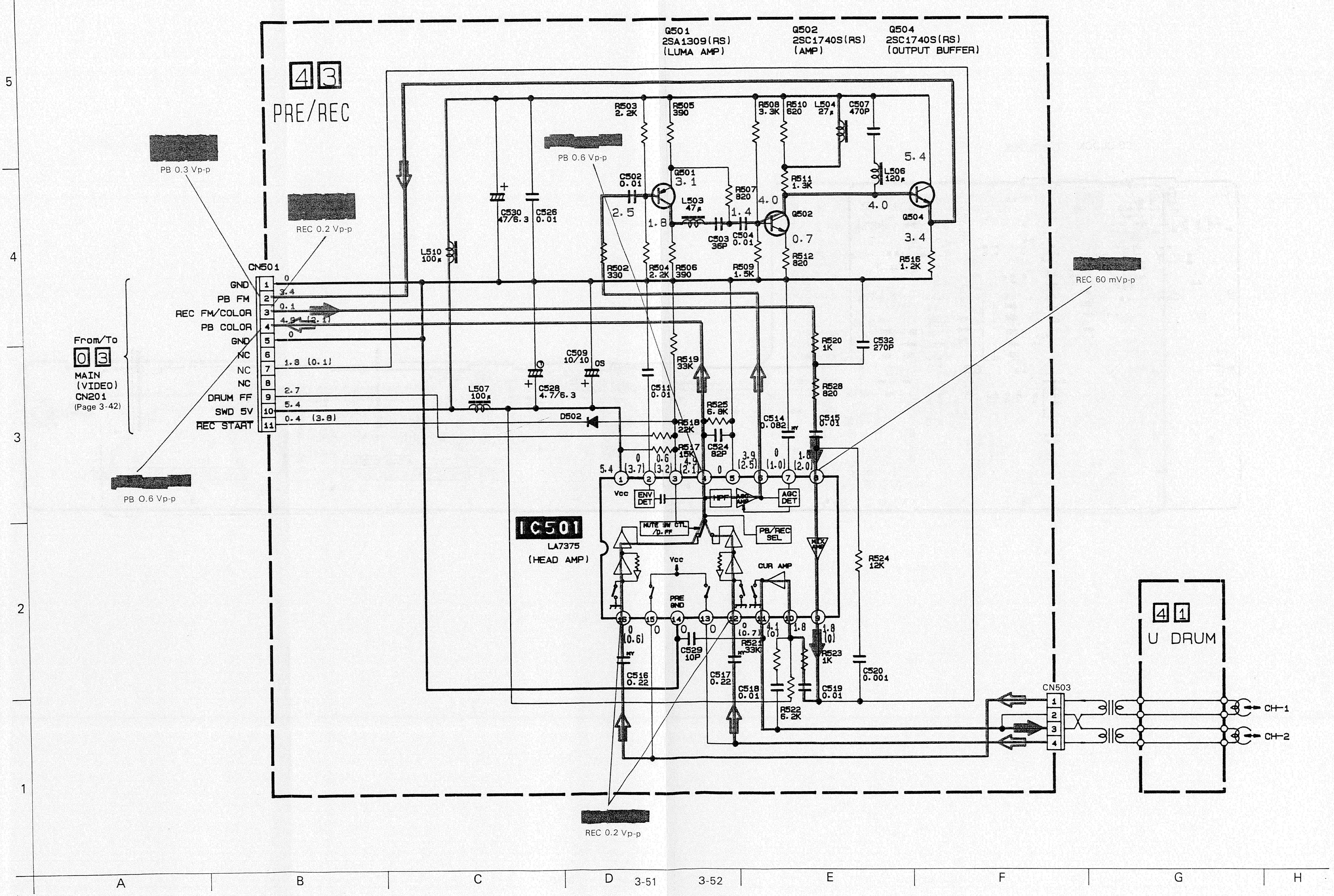
ANODE CONNECTION

	4G	3G	2G	1G		4G	3G	2G	1G
P1	REC	2a	2a	2a	P9	ITR	1a	1a	1a
P2	VPS	2b	2b	2b	P10	PLAY	1b	1b	1b
P3	STOP	2c	2c	2c	P11	▭	1c	1c	1c
P4	TIMER	2d	2d	2d	P12	D	1d	1d	1d
P5	M	2e	2e	2e	P13	-	1e	1e	1e
P6	VIDEO	2f	2f	2f	P14	-	1f	1f	1f
P7	START	2g	2g	2g	P15	-	1g	1g	1g
P8	W	○ ○	○	○	P16	-	D	M	Y

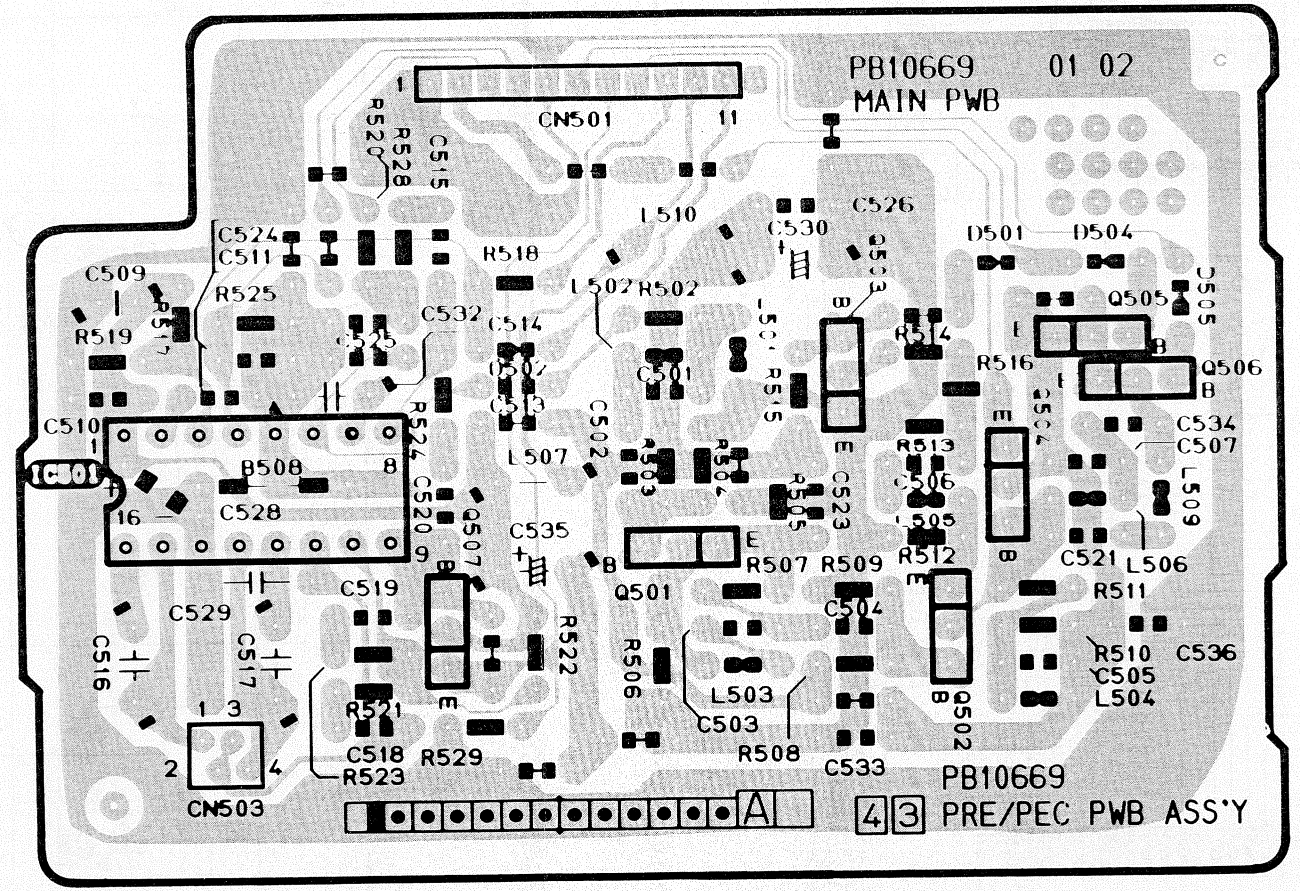
3.26 TIMER/DISPLAY/SWITCH CIRCUIT BOARD


C6 CLOCK
C
B
A
CN1
CP1
S3 FF
C8
S4 REW
D5
D4
C2
C10
S2
STOP/ EJECT
S7 PLAY
D125
D126
D124
D123
TP1
R7 POWER
S1
S2
C1
C3
C4
C9
C11
C12
C13
C14
R5
D2
X1
R13
R14
R15
R16
R17
R22
R23
R24
R25
R26
R8
R9
R10
R11
R12
R3
R4
R6
R1
D1
D3
D7
D11
D12
IC1
RA2
Q1
S5 CH(+)
S6 REC
S8 CH(-)
IC101
C5
RA1
R2
D6
R27
R101
D101
POWER
PB10667 A B C D E
T/D/S PWB ASS'Y
PB10667 -01-02
T/D/S PWB
1
2
3
4
5
6
7
8

3.27 PRE/REC SCHEMATIC DIAGRAM

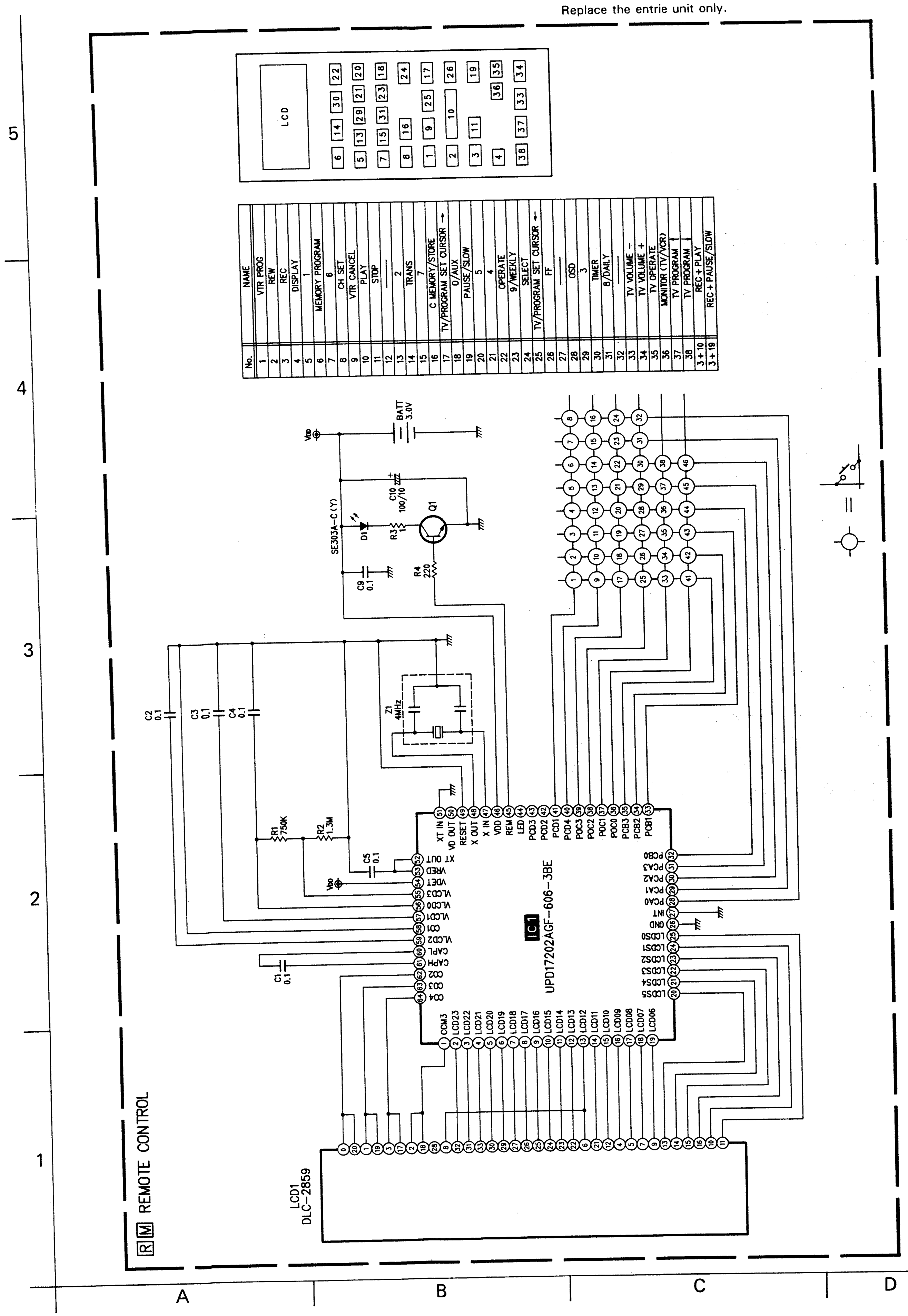

43
PRE/REC
PB 0.3 Vp-p
REC 0.2 Vp-p
PB 0.6 Vp-p
PB 0.6 Vp-p
REC 60 mVp-p
REC 0.2 Vp-p
Q501
2SA1309(RS)
(LUMA AMP)
Q502
2SC1740S(RS)
(AMP)
Q504
2SC1740S(RS)
(OUTPUT BUFFER)
CN501
GND
PB FM
REC FM/COLOR
PB COLOR
GND
NC
NC
NC
DRUM FF
SWD 5V
REC START
From/To
03
MAIN
(VIDEO)
CN201
(Page 3-42)
R503 2.2K
R505 390
R508 3.3K
R510 620
L504 27μ
C507 470P
C502 0.01
R507 820
L503 47μ
C503 36P
C504 0.01
R511 1.3K
L506 120μ
C530 47/6.3
C526 0.01
L510 100μ
R502 330
R504 2.2K
R506 390
R509 1.5K
R512 820
R516 1.2K
R520 1K
C532 270P
R528 820
R519 33K
C509 10/10 OS
C528 4.7/6.3
L507 100μ
D502
C511 0.01
R525 6.8K
R518 22K
R517 15K
C524 82P
C514 0.082 MY
C515 0.01
IC501
LA7375
(HEAD AMP)
Vcc
ENV DET
HPF
AGC AMP
AGC DET
MUTE SW CTL /D.FF
PB/REC SEL
REC AMP
PRE GND
CUR AMP
R524 12K
C516 0.22
C529 10P
C517 0.22
R521 33K
C518 0.01
R522 6.2K
R523 1K
C519 0.01
C520 0.001
CN503
41
U DRUM
CH-1
CH-2
5
4
3
2
1
A
B
C
D
E
F
G
H

3.28 PRE/REC CIRCUIT BOARD


PB10669
01 02
MAIN PWB
CN501
1
11
R520
R528
C515
L510
C526
C530
Q503
D501
D504
D505
Q505
Q506
C524
C511
C509
R518
L502
R502
L501
R515
R514
R516
Q504
R519
R517
R525
C525
C532
C514
Q507
C513
C502
C501
R503
R504
R505
C523
R513
C506
L505
R512
C534
C507
L509
C510
IC501
1
8
R508
C528
16
9
C520
R524
L507
C535
E
B
R507
R509
C521
L506
C529
C519
Q501
C504
R511
C516
C517
R522
R506
R510
C505
C536
L504
1
3
2
4
R521
C518
R523
R529
L503
C503
R508
C533
Q502
CN503
A
4
3
PB10669
PRE/PEC PWB ASS'Y

3.29 REMOTE CONTROL SCHEMATIC DIAGRAM

Notes:
1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entrie unit only.

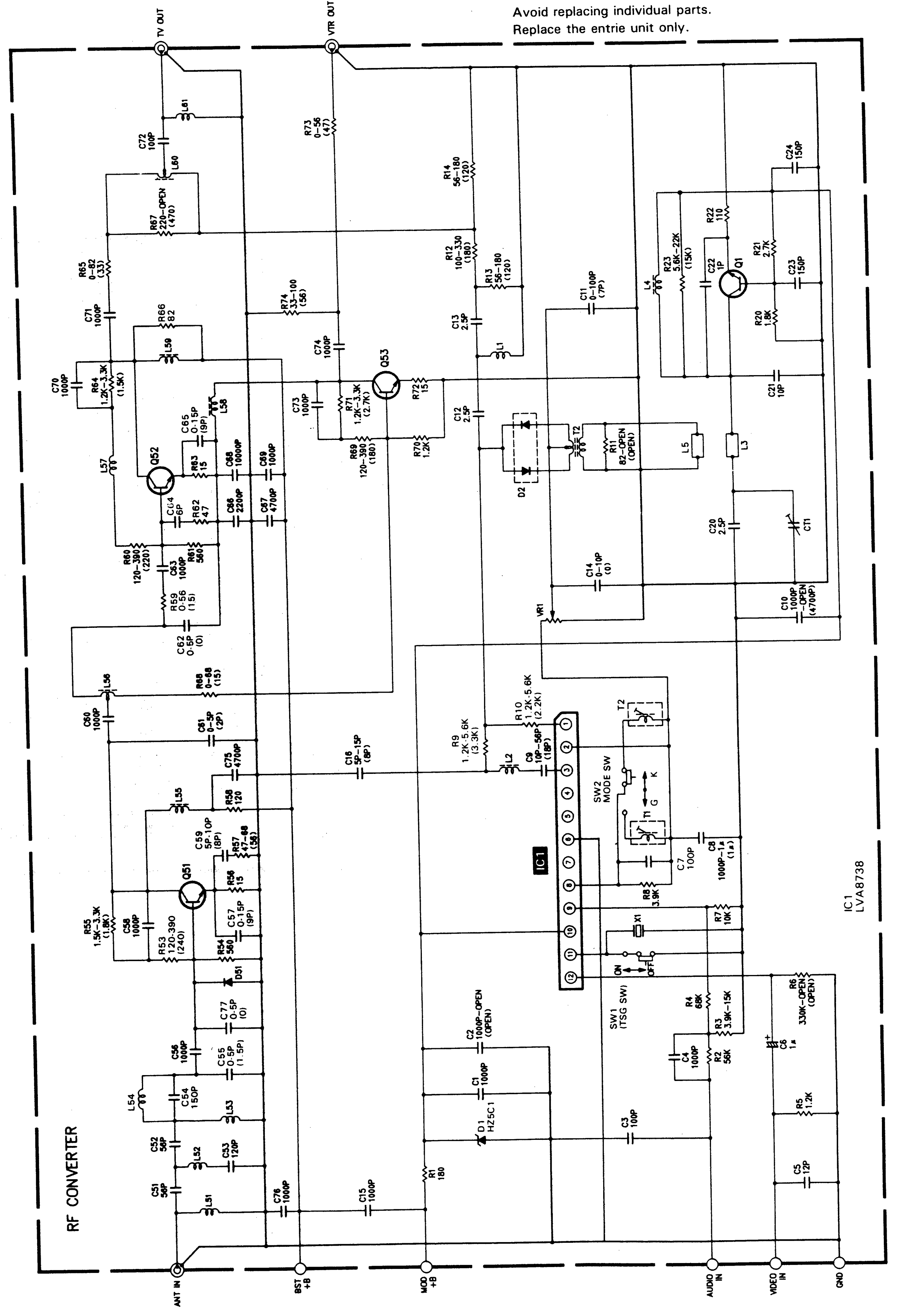


RM REMOTE CONTROL
LCD
IC1 UPD17202AGF-606-3BE
LCD1 DLC-2859
BATT 3.0V
VDD
SE303A-C(Y)
D1
Q1
C10 100/10
R3 1Ω
R4 220
C9 0.1
Z1 4MHz
R1 750K
R2 1.3M
C5 0.1
C1 0.1
C2 0.1
C3 0.1
C4 0.1

No.	NAME
1	VTR PROG
2	REW
3	REC
4	DISPLAY
5	1
6	MEMORY PROGRAM
7	6
8	CH SET
9	VTR CANCEL
10	PLAY
11	STOP
12	—
13	2
14	TRANS
15	7
16	C MEMORY/STORE
17	TV/PROGRAM SET CURSOR →
18	0/AUX
19	PAUSE/SLOW
20	5
21	4
22	OPERATE
23	9/WEEKLY
24	SELECT
25	TV/PROGRAM SET CURSOR ←
26	FF
27	—
28	OSD
29	3
30	TIMER
31	8/DAILY
32	—
33	TV VOLUME −
34	TV VOLUME +
35	TV OPERATE
36	MONITOR (TV/VCR)
37	TV PROGRAM ↑
38	TV PROGRAM ↓
3+10	REC + PLAY
3+19	REC + PAUSE/SLOW

3.30 RF CONVERTER SCHEMATIC DIAGRAM

Notes:
1. All parts slown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entrie unit only.



RF CONVERTER
TV OUT
VTR OUT
ANT IN
BST +B
MOD +B
AUDIO IN
VIDEO IN
GND
IC1 LVA8738
SW1 (TSG SW)
SW2 MODE SW
ON OFF
Q1
Q51
Q52
Q53
D1 HZ5C1
D2
VR1
X1
T1
T2

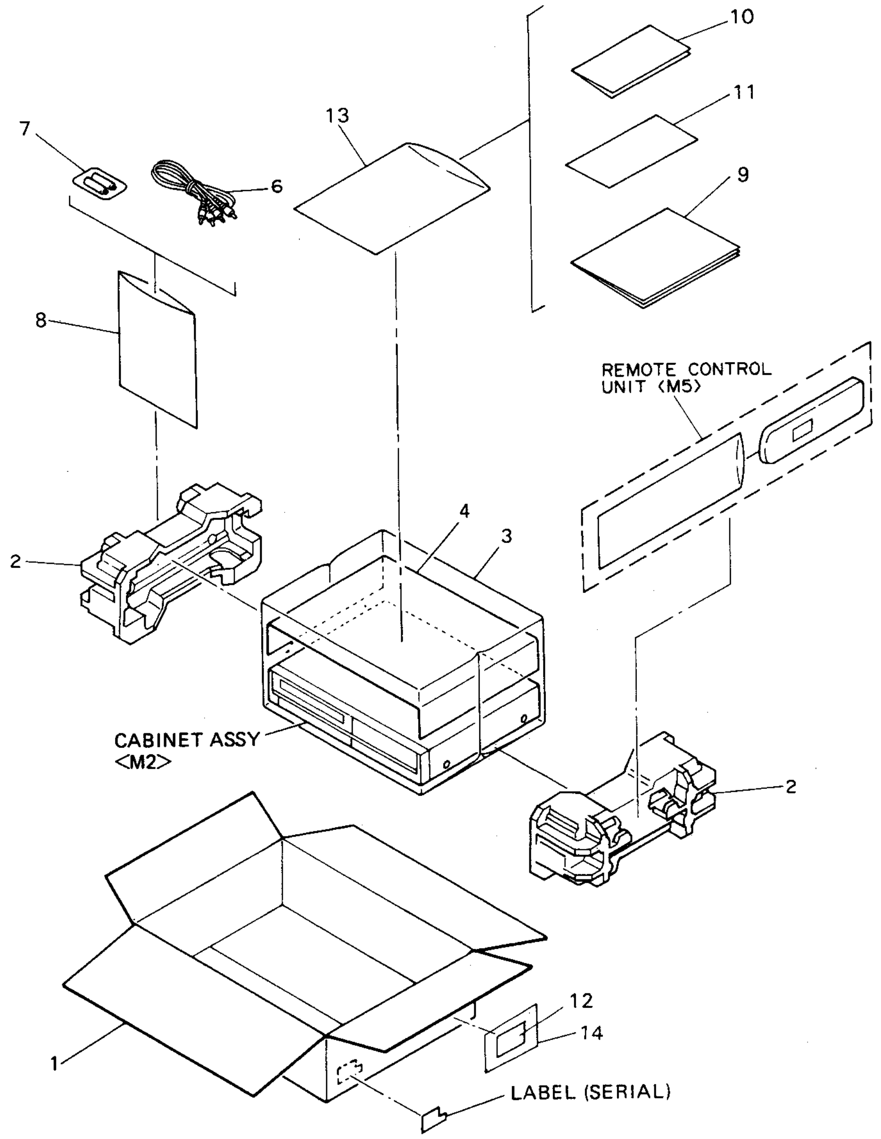
SECTION 4
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety.Replace only with specified part numbers.

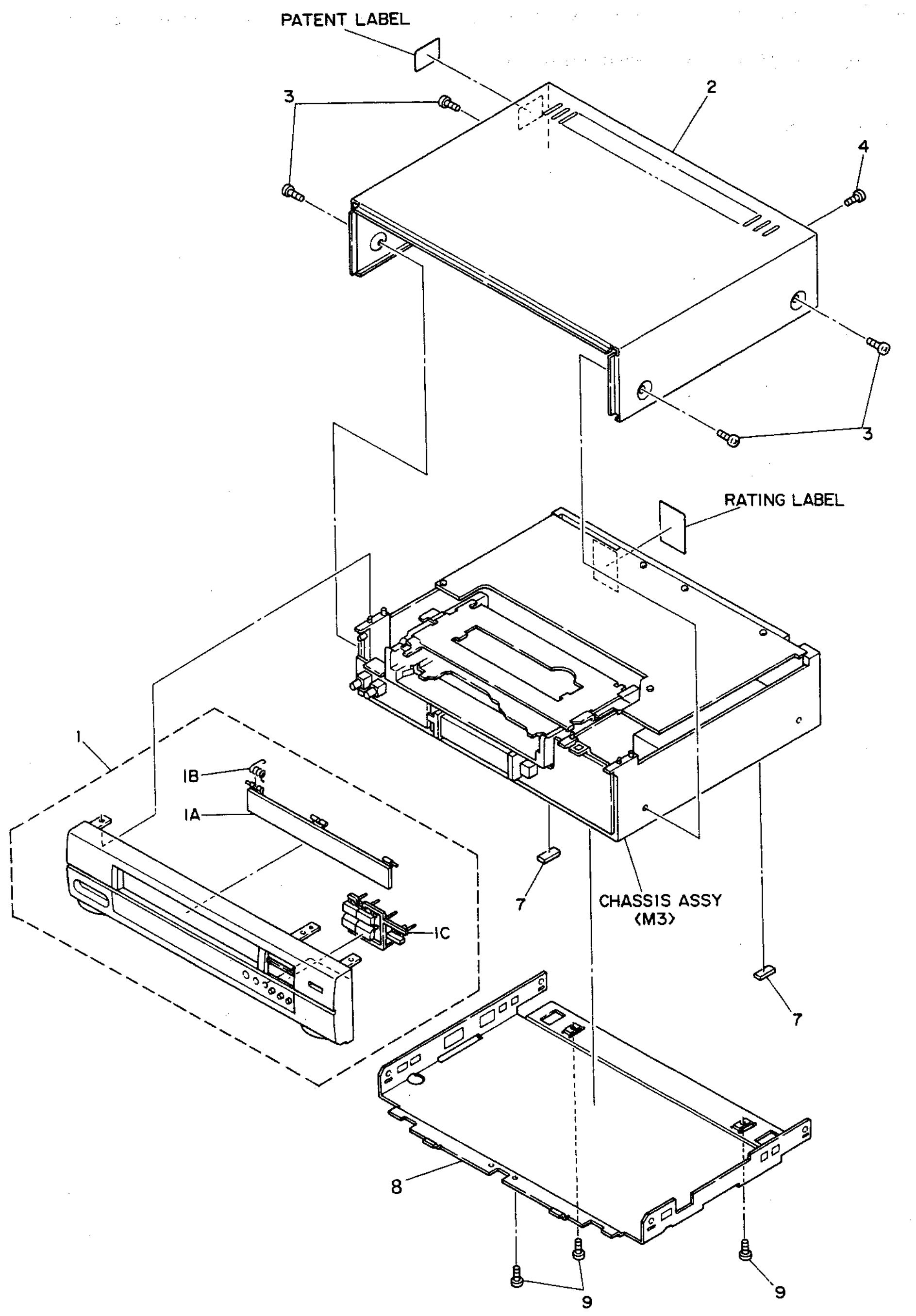
NOTE:<M >indicates mechanical symbol number.

4.1 PACKING ASSEMBLY <M1>



⚠	REF.No	PART No.	PART NAME,DESCRIPTION
		PACKING ASSEMBLY <M1>	
	1	PQ34338-19	PACKING CASE, E
		PQ34338-20	PACKING CASE, EG
	2	PQ34516A	CUSHION ASSEMBLY
	3	PQM30021-55	POLY BAG
	4	PQ41026-31	PROTECT SHEET
	6	PU59167-3	RF CABLE
	or	PU59168-3	RF CABLE
	7	UM-3DJ2P	BATTERY, X2
	8	QPGA020-02005	POLY BAG
⚠	9	PU30425-1295	INSTRUCTIONS, E
⚠	10	PU30425-1296	INSTRUCTIONS
	11	TCN-3379	TAPE CATALOG
	12	BT-20114	WARRANTY CARD, EG
	13	QPGA025-03505	POLY BAG
	14	PQ33909	POLY BAG, EG

4.2 CABINET ASSEMBLY <M2>


PATENT LABEL
3
2
4
3
3
RATING LABEL
1
1B
1A
1C
7
CHASSIS ASSY
<M3>
7
8
9
9

* *

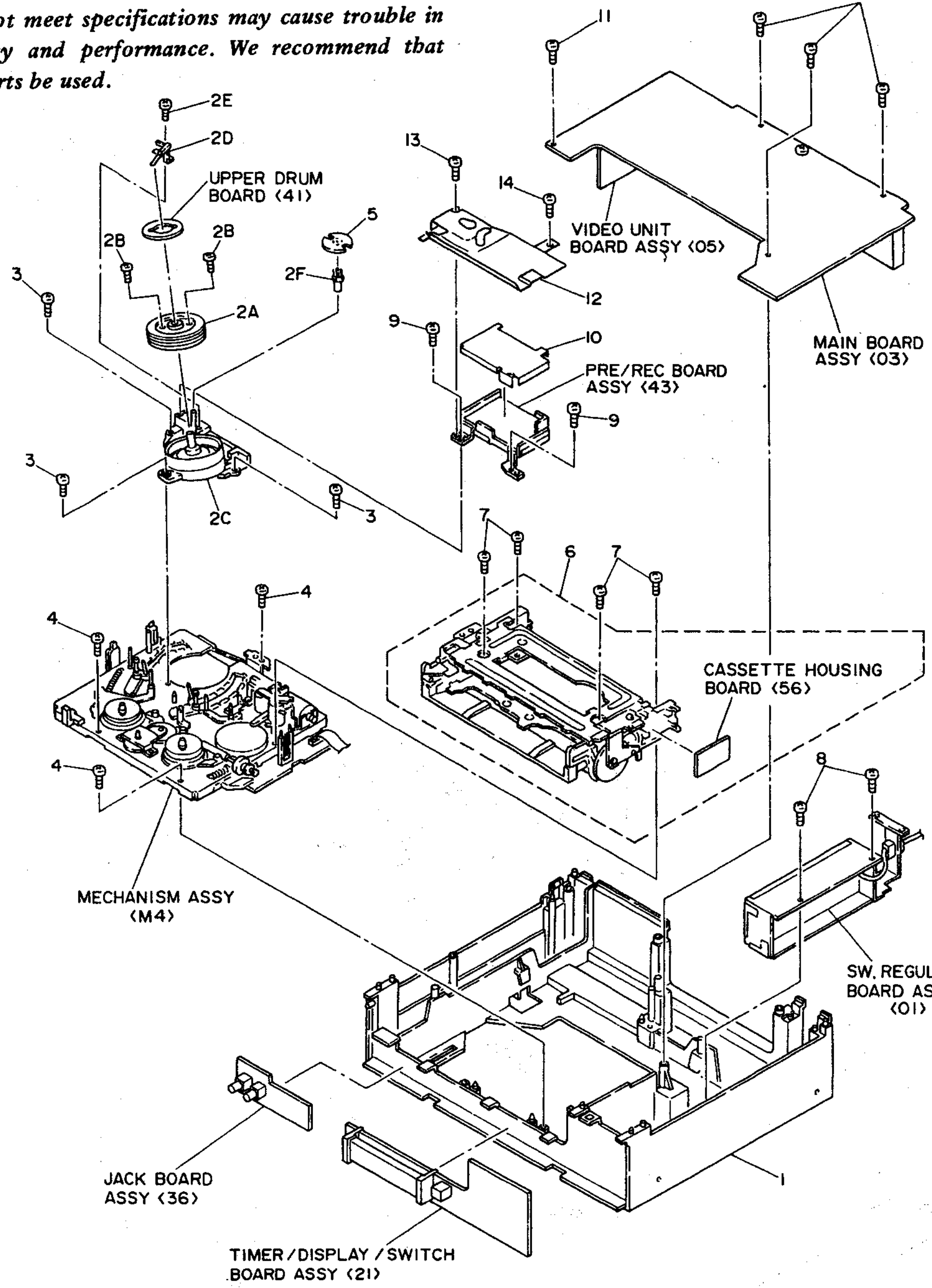
CABINET ASSEMBLY <M2>

⚠	REF.No	PART No.	PART NAME,DESCRIPTION
	1	PQ11352G-4	FRONT PANEL ASSEMBLY, E
		PQ11352H-4	FRONT PANEL ASSEMBLY, EG
	1A	PQ21374-1-4	CASSETTE DOOR
	1B	PQ45704	TORSION SPRING
	1C	PQ21375-2	BUTTON(1)
⚠	2	PQ11356-2	TOP COVER
	3	PQ43827	SPECIAL SCREW, X4, TOP COVER
	4	PQ45202	SPECIAL SCREW, FOR TOP COVER
	7	PQ43013-3	FOOT, X2
⚠	8	PQ11355	BOTTOM COVER
	9	SDSF3010Z	SCREW, X3, FOR BOTTOM COVER

4.3 CHASSIS ASSEMBLY <M3>

BEWARE OF BOGUS PARTS

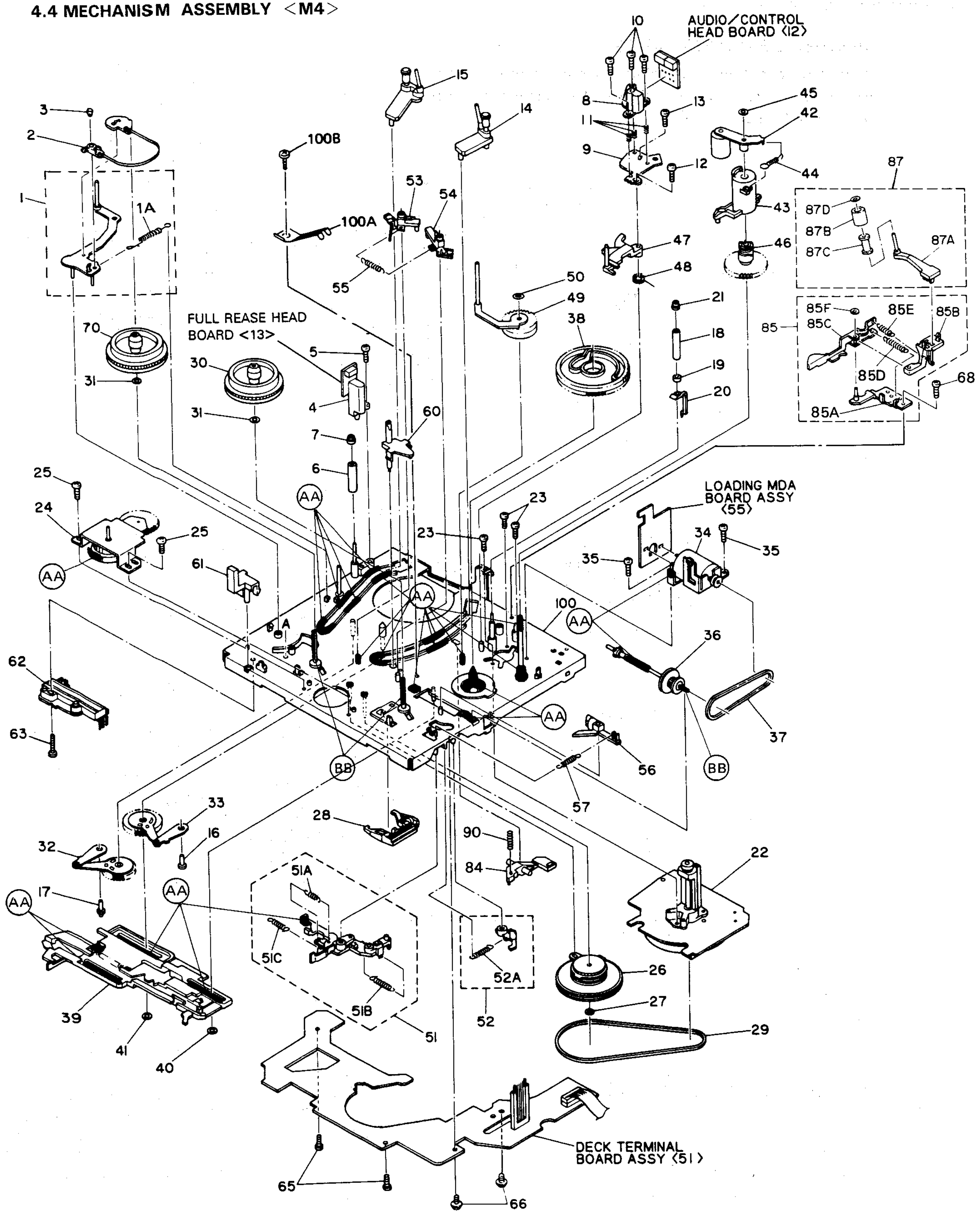
Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.


2E
2D
UPPER DRUM BOARD <41>
2B
2B
5
2F
3
2A
3
2C
3
13
14
VIDEO UNIT BOARD ASSY <05>
12
11
11
MAIN BOARD ASSY <03>
9
10
PRE/REC BOARD ASSY <43>
9
7
6
7
4
4
4
CASSETTE HOUSING BOARD <56>
8
MECHANISM ASSY <M4>
SW. REGULATOR BOARD ASSY <01>
JACK BOARD ASSY <36>
1
TIMER/DISPLAY/SWITCH BOARD ASSY <21>

CHASSIS ASSEMBLY <M3>

⚠	REF.No	PART No.	PART NAME,DESCRIPTION
⚠	1	PQ11354-2	BOTTOM CHASSIS
	2A	PDM2008B-5	UPPER DRUM ASSY
	2B	PDM4165A	DRUM SCREW ASSY,X2
	2C	PDM2138Y	LOWER DRUM MOTOR ASSY
	2D	PDM4229A-1	BRUSH ASSEMBLY
	2E	SPSG2606Z	SCREW
	2F	PDM4226A	ROLLER ASSY
	3	SPST2610Z	SCREW, X3, FOR DRUM ASSEMBLY
	or	SDST2610Z	SCREW, X3, FOR DRUM ASSEMBLY
	4	PQ43831	SPECIAL SCREW, X3, FOR MECH
	5	PQ45160	INERTIA PLATE
	6	PUS29499G	CASSETTE HOUSING ASSEMBLY
	7	SPST2608Z	SCREW, X4, CASS.HOUSING ASSY
	or	SDST2608Z	SCREW, X4, CASS.HOUING ASSY
	8	SDSF3010Z	SCREW, X2, FOR P.S.ASSY
	9	SDSG2606Z	SCREW, X2, FOR PRE/REC
	10	PQ34321	SHIELD CASE, FOR PRE/REC
	11	SDSF3010Z	SCREW, X4, FOR MAIN BOARD
	12	PQ34362	SHIELD PLATE, FOR DRUM
	or	PQ34329	SHIELD PLATE, FOR DRUM
	13	SDST2605Z	SCREW, FOR SHIELD PLATE
	14	SDSF2610Z	SCREW, FOR SHIELD PLATE

4.4 MECHANISM ASSEMBLY <M4>


10
AUDIO/CONTROL HEAD BOARD <12>
15
14
8
13
45
42
3
2
100B
11
9
12
44
87
43
87D
87B
87C
87A
1
1A
53
54
100A
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47
46
48
50
49
FULL REASE HEAD BOARD <13>
70
38
21
85F
85E
85B
85C
85
18
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31
31
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20
85D
68
85A
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24
25
AA
23
23
LOADING MDA BOARD ASSY <55>
34
35
35
61
AA
AA
A
100
AA
36
62
63
AA
37
56
BB
BB
57
33
28
32
16
90
84
22
AA
17
51A
AA
51C
52A
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51B
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41
40
DECK TERMINAL BOARD ASSY <51>
65
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Category	Part number	MARK
Grease	KANTO-G-31KAV	(AA)
Oil	COSMO-HV56	(BB)

NOTE: The section marked in (AA) and (BB) indicate lubrication and greasing areas.

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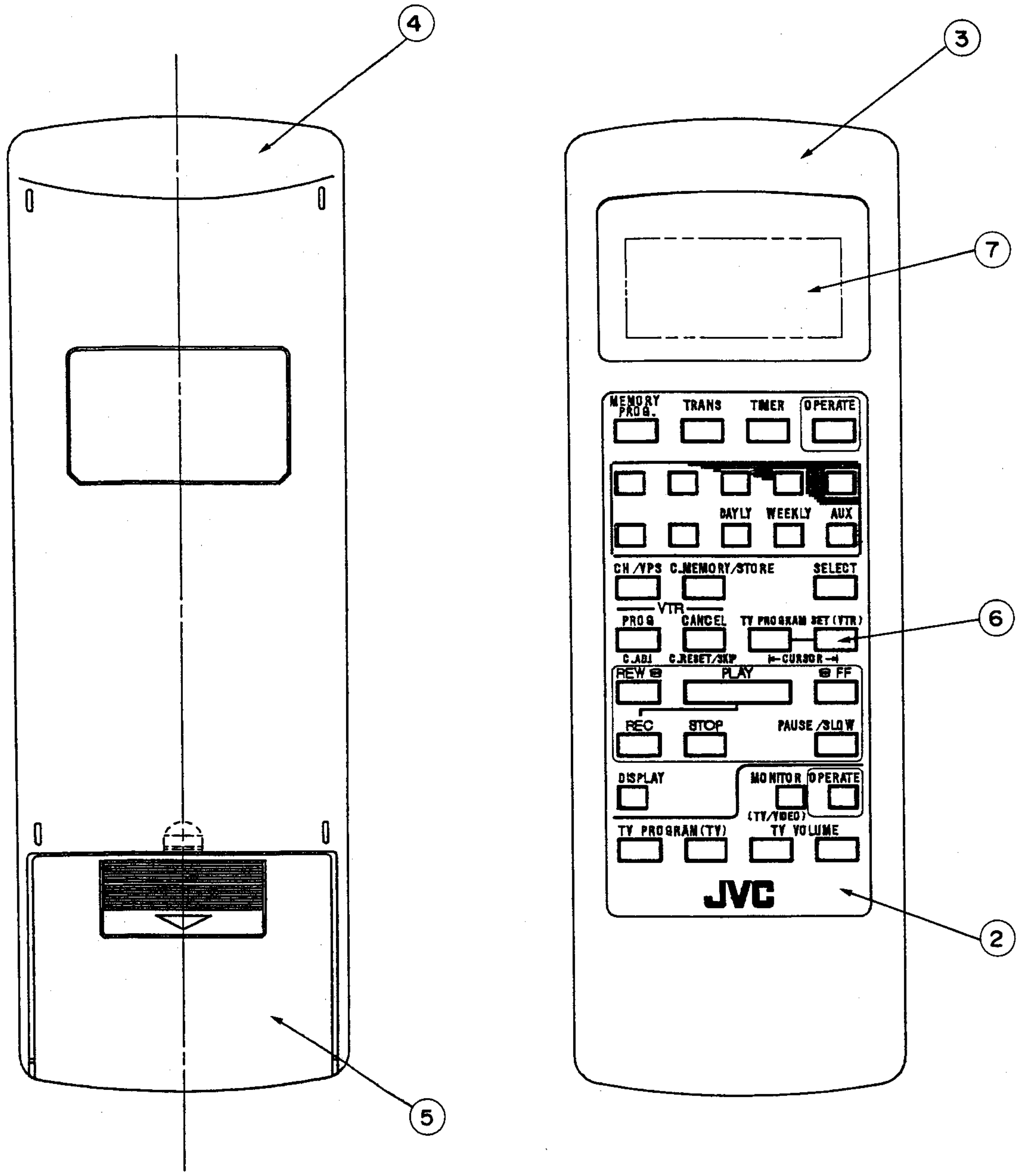
MECHANISM ASSEMBLY <M4>

⚠	REF.No	PART No.	PART NAME,DESCRIPTION
	1	PQ43497E-11	TENSION ARM ASSY
	1A	PQ43500	TENSION SPRING
	2	PQ43501B-12	TENSION BAND ASSY
	3	PQ43503-1-4	ADJUST PIN
	4	PU60616	FULL ERASE HEAD
	5	SDSF2614Z	SCREW, FOR F.E.HEAD
	6	PQ43505-1-1	ROLLER
	7	PQ43506	GUIDE POLE CAP
	8	PEHE0174	AUDIO CONTROL HEAD
	9	PQ43509	HEAD BASE
	10	PQ43687A	SPECIAL SCREW,X3
	11	PQM30002-192	COMPRESSION SPRING,X3
	12	SPSF2608M	SCREW
	13	SPSP2606Z	SCREW
	14	PU61103-2-6	POLE BASE ASSY (TAKE UP)
	15	PU61151-2-5	POLE BASE ASSY (SUPPLY)
	16	PQ43524	STOPPER
	17	PQ43525	STOPPER 2
	18	PQ43526-1-3	TAPE GUIDE
	19	PQ43670-1-1	GUIDE FLANGE
	20	PQ43675	TAPE GUARD
	21	PQ43506	GUIDE POLE CAP
⚠	22	PU61285	CAPSTAN MOTOR
	23	SPSG2608Z	SCREW,X3
	24	PU60618-1-3	IDLER GEAR UNIT
	25	SPST2606Z	SCREW,X2
	26	PU60953-1-5	CLUTCH UNIT
	27	PQM30017-8	SLIT WASHER
	28	PQ43532B	CHANGE LEVER ASSEMBLY
	29	PQM30003-24	TIMING BELT
	30	PU60858-1-4	REEL DISK (TAKE-UP)
	31	PQM30018-54	SPACER,X2
	32	PQ43537A	LOADING ARM ASSY,SUPPLY
	33	PQ43542B	LOADING ARM ASSY,TAKE-UP
⚠	34	PQ43676B-5	MODE MOTOR ASSY
⚠		or PQ43676C-7	MODE MOTOR ASSY
	35	SPST2606Z	SCREW,X2
	36	PQ43548A-2	WORM CLUTCH ASSY
	37	PQM30003-23	LOADING BELT
	38	PQ32413-1-6	CONTROL CAM
	39	PQ43555B-6	PLATE ASSY
	40	PQM30017-12	SLIT WASHER
	41	PQM30017-8	SLIT WASHER
	42	PQ43558A-5	PINCH ROLLER ARM ASSY
		or PQ43558B	PINCH ROLLER ARM ASSY
	43	PQ32415	PINCH ROLLER PRESS LEVER
	44	PQM30001-233	TENSION SPRING
	45	PQM30017-12	SLIT WASHER
	46	PQ32416-2	PINCH ROLLER CAM
	47	PQ43567A-13	GUIDE ARM ASSY
	48	PQ43569-1-3	TORSION SPRING
	49	PQ43570A-2	HALF LOADING GEAR ASSY
	50	PQM30017-12	SLIT WASHER
	51	PQ43575A-5	CANCEL LEVER ASSY
	51A	PQM30001-273	TENSION SPRING
	51B	PQM30001-237	TENSION SPRING
	51C	PQM30001-274	TENSION SPRING
	52	PQ43578A-2	HOOK ASSY
	52A	PQM30001-238	TENSION SPRING
	53	PQ43581C	MAIN BRAKE ASSY(SUPPLY)
	54	PQ43582B	MAIN BRAKE ASSY(TAKE-UP)
	55	PQM30001-251	TENSION SPRING
	56	PQ43583A	SUB BRAKE ASSY(TAKE-UP)
	57	PQM30001-235	TENSION SPRING
	60	PU60621-1-2	LED HOLDER,INCL.LED:D1
	61	PU60624-1-4	REC SAFETY SWITCH,S2
	62	PU60622-1-2	SLIDE ENCORDER,S3
	63	SDSF2614Z	SCREW
	65	SDST2616Z	SCREW,X2
	66	GPSF2608Z	SCREW,X2
	68	SPST2606Z	SCREW, FOR ARM BASE ASSEMBLY
	70	PU60859-1-4	REEL DISK (SUPPLY)
	84	PQ43584A-5	CAPSTAN BRAKE ASSY
	85	PQ44843A-3	ARM BASE ASSY
	85A	PQ44845B	ARM BASE SUB ASSY
	85B	PQ33511-1-2	CLEANER ARM
	85C	PQ44841-1-4	CANCEL LEVER
	85D	PQM30001-299	TENSION SPRING
	85E	PQM30001-300	TENSION SPRING
	85F	PQM30017-5	SLIT WASHER
	87	PQ44840B	CLEANER BASE ASSEMBLY
	87A	PQ44844A	CLEANER BASE SUB ASSEMBLY
	87B	PQ44837	CLEANER
	87C	PQ45689	ROLLER
	87D	PQM30017-38	SLIT WASHER
	90	PQM30002-201	COMPRESSION SPRING
	100	PQ20650J	MAIN DECK ASSEMBLY
	100A	PQ43849	EARTH PLATE
	100B	SPST2604Z	SCREW

4.5 REMOTE CONTROL UNIT <M5>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MEMORY PROG.
TRANS
TIMER
OPERATE
DAYLY
WEEKLY
AUX
CH/VPS
C.MEMORY/STORE
SELECT
VTR
PROG
CANCEL
TV PROGRAM SET (VTR)
6
C.ADJ
C.RESET/SKIP
←CURSOR→
REW
PLAY
FF
REC
STOP
PAUSE/SLOW
DISPLAY
MONITOR
OPERATE
(TV/VIDEO)
TV PROGRAM(TV)
TV VOLUME
JVC
2
5

⚠	REF.No	PART No.	PART NAME,DESCRIPTION

REMOTE CONTROLLER <M5>

⚠	REF.No	PART No.	PART NAME,DESCRIPTION
⚠	1	PQ21433A	REMOTE CONTROLLER, E
⚠		PQ21433B	REMOTE CONTROLLER, EG

⚠	REF.No	PART No.	PART NAME,DESCRIPTION
	2	PQ34443	PLATE, E
		PQ34443-2	PLATE, EG
	3	PQ34438	CASE (A)
	4	PQ34439	CASE (B)
	5	PQ34440	CAP (BATTERY)
	6	PQ34441	BUTTON
	7	PQ34442	WINDOW

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety.Replace only with specified part numbers.

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SWITCHING REGULATOR BOARD ASSY 〈01〉

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	PWBA	PB20594A	SW.REGULATOR BOARD ASSY	
⚠	Q1	2SC4517A-LF619	TRANSISTOR	
	Q2	2SC3616(MLK)	TRANSISTOR	
	Q3	2SC1740S(S)	TRANSISTOR	
	D1	10E6-F2	DIODE	
	D2	10E6-F2	DIODE	
	D3	10E6-F2	DIODE	
	D4	10E6-F2	DIODE	
	D5	1SR153-400-T2	FR DIODE	
	or	AU01	FR DIODE	
	D6	1SR153-400-T2	FR DIODE	
	or	AU01	FR DIODE	
	D7	1SS133	DIODE	
	or	MA165	DIODE	
	D8	RD27ES-T1B2	DIODE	
	or	MTZ27BT-77	ZENER DIODE	
	or	UZ27BSB	ZENER DIODE	
	D11	1SS133	DIODE	
	or	MA165	DIODE	
	D13	AU01Z	FR DIODE	
	or	ERA18-02-T2	FR DIODE	
	or	1SR153-200-T2	FR DIODE	
	D14	RL2Z-LFB2	FR DIODE	
	or	ERC30-02-L6	FR DIODE	
	D15	AK04	DIODE	
	or	11EQS04	SB DIODE	
	D16	AU01Z	FR DIODE	
	or	ERA18-02-T2	FR DIODE	
	or	1SR153-200-T2	FR DIODE	
	D17	MTZV6.2C	ZENER DIODE	
	or	RD6.2ES-T1B3	ZENER DIODE	
	or	UZ6.2BSC	ZENER DIODE	
	D19	MTZ33AT-77	ZENER DIODE	
	or	RD33ES-T1B1	ZENER DIODE	
	or	UZ33BSA	ZENER DIODE	
	D22	1SS133	DIODE	
	or	MA165	DIODE	
	R3	QRD161J-224	RESISTOR	220kΩ, 1/6W
	R4	QRD161J-224	RESISTOR	220kΩ, 1/6W
	R5	QRD161J-683	RESISTOR	68kΩ, 1/6W
	R6	QRG029J-683	OMF RESISTOR	68kΩ, 2W
	R7	QRG029J-331A	OMF RESISTOR	330Ω, 2W
	R8	QRD161J-471	RESISTOR	470Ω, 1/6W
	R9	QRX014J-R39Z	MF RESISTOR	0.39Ω, 1W
	R10	QRD161J-122	RESISTOR	1.2kΩ, 1/6W
⚠	R16	QRG029J-222A	FUSIBLE RESISTOR	2.2kΩ, 2W
⚠	R17	QRZ0077-101X	FUSIBLE RESISTOR	100Ω, 1/4W
	R20	QRD161J-471	RESISTOR	470Ω, 1/6W
	R21	QRV144F-3740AY	CMF RESISTOR	374Ω, 1/6W
	R22	QRV144F-4870AY	CMF RESISTOR	487Ω, 1/6W
	R23	QRD161J-122	RESISTOR	1.2kΩ, 1/6W
	R24	QRX014J-4R7Z	MF RESISTOR	4.7Ω, 1W
⚠	C1	QFZ9037-333	M CAPACITOR	0.033μF, 250V
⚠	C2	QFZ9037-333	M CAPACITOR	0.033μF, 250V
⚠	C3	QFZ9037-333	M CAPACITOR	0.033μF, 250V
⚠	C6	QCZ9016-222M	CAPACITOR	0.0022μF, 250V
⚠	or	QCZ9048-222	CAPACITOR	0.0022μF, 250V
⚠	C7	QCZ9016-222M	CAPACITOR	0.0022μF, 250V
⚠	or	QCZ9048-222	CAPACITOR	0.0022μF, 250V
⚠	C8	QCZ9016-222M	CAPACITOR	0.0022μF, 250V
⚠	or	QCZ9048-222	CAPACITOR	0.0022μF, 250V
⚠	C10	QCZ9026-222	CAPACITOR	0.0022μF, 250V
⚠	or	QCZ9039-222	CAPACITOR	0.0022μF, 250V
	C12	PECA0793-686	E CAPACITOR	68μF, 400V
	C13	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C14	QCZ0212-472	CAPACITOR	0.0047μF, 1kV
	C15	QCZ0213-101Z	CAPACITOR	100pF, 1kV
	C16	QFV11HJ-104	MM CAPACITOR	0.1μF, 50V
	or	QFV41HJ-104	TF CAPACITOR	0.1μF, 50V
	C17	QFLA1HJ-103Z	M CAPACITOR	0.01μF, 50V
	C21	QETC1AM-107	E CAPACITOR	100μF, 10V
	C23	QETC1JM-226	E CAPACITOR	22μF, 63V
	C24	QEM41CM-687C	E CAPACITOR	680μF, 16V
	C25	QEM41AM-687C	E CAPACITOR	680μF, 10V
	C26	QETC1HM-226	E CAPACITOR	22μF, 50V
	C29	QERF1HM-474	E CAPACITOR	0.47μF, 50V
	C30	QFLA1HJ-103Z	M CAPACITOR	0.01μF, 50V
	C31	QETB1CM-477	E CAPACITOR	470μF, 16V
	C32	QETB1AM-477	E CAPACITOR	470μF, 10V
	L3	PELN0687	COIL	33μH
	or	PELN0695-330K	COIL	33μH
	L4	PELN0687	COIL	33μH
	or	PELN0695-330K	COIL	33μH
⚠	PC1	PC111S	PHOTO COUPLER	
⚠	or	PC111LS	PHOTO COUPLER	
⚠	POC1	QMP39J0-200	POWER CORD	
⚠	T1	PELN0411	SW TRANS	
⚠	CL1	PU57505	FUSE CLIP, X2, FOR F1	
	ETH1	PQ45711	E.PLATE(R/B)	

⚠	REF.No	PART No.	PART NAME,DESCRIPTION
⚠	HD1	QHS3771-108	STRAIN RELIEF
	HS1	PQ45788	HEAT SINK, FOR Q1
⚠	LF1	PU59707	LINE FILTER
⚠		or PELN0255	LINE FILTER
⚠	LF2	PU60347	LINE FILTER
⚠		or PU61108	LINE FILTER
	SCW1	SDST2606Z	SCREW, FOR EARTH PLATE
	SCW2	SDST3006Z	SCREW, FOR Q1-HEAT SINK
⚠	SLD1	PQ21398	S.CASE(S/R)
	SLD2	PQ34326	S.COVER(S/R)
	CN1	PU60910-109	CONNECTOR
⚠	CP1	ICP-N20	CIRCUIT PROTECTOR
⚠	F1	QMF51E2-1R25	FUSE, T1.25A
⚠		or QMF51E2-1R25J1	FUSE, T1.25A

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MAIN BOARD ASSEMBLY <03><43>

	PWBA	PB10669A1-02	MAIN BOARD ASSEMBLY, E
		PB10669B1-02	MAIN BOARD ASSEMBLY, EG
	PL1	PQ45063	EARTH PLATE, FOR TER.BOARD
		or PQ45707	E.PLATE(M/T), FOR TER.BOARD
⚠	RF1	PERF0091	RF CONVERTER
	CL1	PU56729-2	WIRE CLAMP, X2
	SCW1	SDST2605Z	SCREW, FOR RF CONVERTER
	SCW2	SDSF3010Z	SCREW, TERMINAL BOARD
	SPC1	PU60010-2	SPACER, X3
⚠	TB1	PQ11359	TERMINAL BOARD
	J901	PEMC0766	RGB21PIN SOCKET, FOR PERI.CON.
	TP201	PEMC0726-030C	TEST PIN, X16
		or PEMC0727	TEST PIN, X16

–TUNER/IF SECTION–

⚠	TNR1	PERF0095	TUNER
	IC1	LA7577V	IC
	IC2	AN1358	IC
		or M5223P	IC
	Q1	2SC1740S(S)	TRANSISTOR
	Q2	2SB810H,J	TRANSISTOR
	Q3	DTC114ES	TRANSISTOR
	Q4	2SA933S(S)	TRANSISTOR
	Q5	2SA933S(S)	TRANSISTOR

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	Q6	2SA933S(S)	TRANSISTOR	
	Q9	2SC2001(LK)	TRANSISTOR	
	Q10	DTC144ES	TRANSISTOR	
	Q11	2SK381(C)	FE TRANSISTOR	
	Q12	DTC144ES	TRANSISTOR	
	Q13	2SC1740S(S)	TRANSISTOR	
	Q14	2SA933S(S)	TRANSISTOR, EG	
	Q15	2SC1740S(S)	TRANSISTOR	
	Q16	2SA933S(S)	TRANSISTOR	
	Q18	2SD1450S,T	TRANSISTOR	
	Q19	2SA933S(S)	TRANSISTOR	
	Q20	2SK381(AB)	FE TRANSISTOR	
	Q21	DTC114YS	TRANSISTOR	
	Q23	2SC3068	TRANSISTOR	
	D1	HZT31	ZENER DIODE	
	D5	MTZ11B	ZENER DIODE	
	R3	QRSA08J-683YN	RESISTOR	68kΩ, 1/10W
	R6	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R7	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R8	QRSA08J-223YN	RESISTOR	22kΩ, 1/10W
	R9	QRSA08J-154YN	RESISTOR	150kΩ, 1/10W
	R10	QRSA08J-154YN	RESISTOR	150kΩ, 1/10W
	R13	QRSA08J-112YN	RESISTOR	1.1kΩ, 1/10W
	R14	QRSA08J-333YN	RESISTOR	33kΩ, 1/10W
	R15	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R16	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R17	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R18	QRSA08J-182YN	RESISTOR	1.8kΩ, 1/10W
	R19	QRSA08J-182YN	RESISTOR	1.8kΩ, 1/10W
	R20	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R21	QRSA08J-182YN	RESISTOR	1.8kΩ, 1/10W
	R22	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R23	QRSA08J-182YN	RESISTOR	1.8kΩ, 1/10W
	R24	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R25	QRSA08J-473YN	RESISTOR	47kΩ, 1/10W
	R31	QRSA08J-750YN	RESISTOR	75Ω, 1/10W
	R32	QRSA08J-680YN	RESISTOR	68Ω, 1/10W
	R33	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R35	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
	R36	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R38	QRSA08J-152YN	RESISTOR	1.5kΩ, 1/10W
	R39	QRSA08J-182YN	RESISTOR	1.8kΩ, 1/10W
	R40	QVZ3518-103AZ	V RESISTOR, RF AGC	
	R41	QRSA08J-104YN	RESISTOR	100kΩ, 1/10W
	R42	QRSA08J-104YN	RESISTOR	100kΩ, 1/10W
	R43	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R44	QRSA08J-161YN	RESISTOR	160Ω, 1/10W
	R45	QRSA08J-151YN	RESISTOR	150Ω, 1/10W
	R46	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R47	QRSA08J-102YN	RESISTOR, E	1kΩ, 1/10W
	R48	QRSA08J-822YN	RESISTOR	8.2kΩ, 1/10W
	R50	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R51	QRSA08J-222YN	RESISTOR	2.2kΩ, 1/10W
	R53	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	R54	QRSA08J-683YN	RESISTOR	68kΩ, 1/10W
	R55	QRSA08J-273YN	RESISTOR	27kΩ, 1/10W
	R56	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R57	QRSA08J-910YN	RESISTOR, EG	91Ω, 1/10W
	R58	QRSA08J-911YN	RESISTOR, EG	910Ω, 1/10W
	R59	QRSA08J-222YN	RESISTOR, EG	2.2kΩ, 1/10W
	R60	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R61	QRSA08J-184YN	RESISTOR	180kΩ, 1/10W
	R62	QRSA08J-123YN	RESISTOR	12kΩ, 1/10W
	R63	QRSA08J-223YN	RESISTOR	22kΩ, 1/10W
	R64	QRSA08J-822YN	RESISTOR	8.2kΩ, 1/10W
	R65	QRSA08J-272YN	RESISTOR	2.7kΩ, 1/10W
	R68	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R70	QRSA08J-332YN	RESISTOR	3.3kΩ, 1/10W
	R71	QRSA08J-182YN	RESISTOR	1.8kΩ, 1/10W
	R72	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R73	QRSA08J-222YN	RESISTOR	2.2kΩ, 1/10W
	R80	QRSA08J-183YN	RESISTOR	18kΩ, 1/10W
	R81	QRSA08J-824YN	RESISTOR	820kΩ, 1/10W
	R83	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R84	QRSA08J-182YN	RESISTOR	1.8kΩ, 1/10W
	R87	QRSA08J-392YN	RESISTOR	3.9kΩ, 1/10W
	R88	QRSA08J-822YN	RESISTOR	8.2kΩ, 1/10W
	R91	QRSA08J-473YN	RESISTOR	47kΩ, 1/10W
	R92	QCTA1CH-560	CAPACITOR	56pF, 16V
	R93	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
	R96	QRSA08J-223YN	RESISTOR	22kΩ, 1/10W
	R99	QRSA08J-332YN	RESISTOR	3.3kΩ, 1/10W
	C2	QETF1HM-106	E CAPACITOR	10μF, 50V
	C4	QETF1EM-475	E CAPACITOR	4.7μF, 25V
	C8	QEKF1HM-106	E CAPACITOR	10μF, 50V
	C9	QFN31HJ-153	M CAPACITOR	0.015μF, 50V
	C10	QFN31HJ-333	M CAPACITOR	0.033μF, 50V
	C13	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C14	QETF1HM-106	E CAPACITOR	10μF, 50V
	C15	QETF1HM-224	E CAPACITOR	0.22μF, 50V
	C17	QCTA1CH-3R0	CAPACITOR	3pF, 16V
	C18	QCTA1CH-4R0	CAPACITOR	4pF, 16V
	C20	QETF1CM-476	E CAPACITOR	47μF, 16V
	C22	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	C23	QETF1HM-224	E CAPACITOR	0.22μF, 50V
	C24	QCFA1EZ-473	CAPACITOR	0.047μF, 25V
	C26	QEKF1CM-106	E CAPACITOR	10μF, 16V
	C27	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	C28	QFN31HK-683	M CAPACITOR	0.068μF, 50V
	C29	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C30	QEKF1HM-474	E CAPACITOR	0.47μF, 50V
	C31	QCTA1CH-180	CAPACITOR	18pF, 16V
	C34	QETF1CM-336	E CAPACITOR, EG	33μF, 16V
	C35	QEKF1HM-104	E CAPACITOR	0.1μF, 50V
	C40	QFN31HK-473	M CAPACITOR	0.047μF, 50V
	C41	QETF1HM-105	E CAPACITOR	1μF, 50V
	C54	QCTA1CH-1R0	CAPACITOR	1pF, 16V

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	C55	QCTA1CH-3R0	CAPACITOR	3RpF, 16V
	C56	QCTA1CH-3R0	CAPACITOR	3RpF, 16V
	C57	QCTA1CH-180	CAPACITOR	18pF, 16V
	C59	QETF1CM-336	E CAPACITOR	33μF, 16V
	C64	QCYA1HK-331	CAPACITOR	330pF, 50V
	C66	QCTA1CH-150	CAPACITOR	15pF, 16V
	C67	QCTA1CH-750	CAPACITOR	75pF, 16V
	C69	QCTA1CH-560	CAPACITOR	56pF, 16V
	C73	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C77	QRSA08J-0R0Y	RESISTOR	0Ω, 1/10W
	C79	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	C81	QCYA1HK-331	CAPACITOR	330pF, 50V
	C82	QCYA1HK-331	CAPACITOR	330pF, 50V
	C83	QCYA1HK-331	CAPACITOR	330pF, 50V
	C84	QCYA1HK-122	CAPACITOR	0.0012μF, 50V
	C86	QCTA1CH-221	CAPACITOR	220pF, 16V
	C87	QETF1CM-107	E CAPACITOR	100μF, 16V
	C91	QCTA1CH-151	CAPACITOR	150pF, 16V
	L3	PU60025-1R2	COIL	1.2μH
	L4	PU60025-1R5	COIL	1.5μH
	L5	PU59152-1R0J	COIL	1.0μH
	L6	PU59152-8R2J	COIL	8.2μH
	L7	PU59152-470J	COIL	47μH
	L8	PU59152-8R2J	COIL	8.2μH
	L9	PU59152-220J	COIL	22μH
	L10	PU60025-1R0	COIL	1.0μH
	L12	PU59152-101J	COIL	100μH
	CF1	PU32990-2	CERAMIC FILTER	
	CF2	PU60774-2	CERAMIC FILTER	
	SAW1	PEVB0459	SAW FILTER	
	T1	PELN0449	LC TRAP	
	T2	PELN0442	COIL, FM DETECTOR	
	T3	PELN0443	IF.TRANSFORMER, AFC	
	T4	PELN0444	IF.TRANSFORMER, VCO	
	WR1	PW30402-BB06M	COAXIAL CABLE	
	or	PW30401-BB06K	COAXIAL CABLE	

—VPS SECTION (HR-DX22EG ONLY)—

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	IC101	SAA4700	IC	
	R101	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R102	QRSA08J-822YN	RESISTOR	8.2kΩ, 1/10W
	R103	QRSA08J-753YN	RESISTOR	75kΩ, 1/10W
	C101	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C102	QCYA1HK-472	CAPACITOR	0.0047μF, 50V
	C103	QFJ41HJ-104	M CAPACITOR	0.1μF, 50V
	C104	QCYA1HK-471	CAPACITOR	470pF, 50V
	C105	QFJ41HJ-104	M CAPACITOR	0.1μF, 50V
	C106	QCYA1HK-472	CAPACITOR	0.0047μF, 50V
	C107	QCFA1HZ-223	CAPACITOR	0.022μF, 50V

—VIDEO SECTION—

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	IC280	BA7106LS	IC	
	or	XRA7106LS	IC	
	Q201	2SC1740S(RS)	TRANSISTOR	
	or	2SC3199(GB)-TJK	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	Q202	2SC1740S(RS)	TRANSISTOR	
	or	2SC3199(GB)-TJK	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	Q206	2SC1740S(RS)	TRANSISTOR	
	or	2SC3199(GB)-TJK	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	Q207	2SC1740S(RS)	TRANSISTOR	
	or	2SC3199(GB)-TJK	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	Q210	2SA933S(RS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	Q211	2SA933S(RS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	Q213	2SC1740S(RS)	TRANSISTOR	
	or	2SC3199(GB)-TJK	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	Q214	2SA933S(RS)	TRANSISTOR	
	or	2SA1267(YG)-TJK	TRANSISTOR	
	Q217	DTA114ES	TRANSISTOR	
	D281	1SS133	DIODE	
	or	MA165	DIODE	
	R201	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R202	QRSA08J-223YN	RESISTOR	22kΩ, 1/10W
	R203	QRSA08J-223YN	RESISTOR	22kΩ, 1/10W
	R206	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R208	QRD161J-331	RESISTOR	330Ω, 1/6W
	R209	QRSA08J-152YN	RESISTOR	1.5kΩ, 1/10W
	R210	QRSA08J-621YN	RESISTOR	620Ω, 1/10W
	R211	QRSA08J-333YN	RESISTOR	33kΩ, 1/10W
	R212	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R213	QRSA08J-222YN	RESISTOR	2.2kΩ, 1/10W
	R214	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
	R215	QVZ3518-331AZ	V RESISTOR, REC COLOR	330Ω
	or	QVZ3523-331AZ	V RESISTOR, REC COLOR	330Ω
	R216	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R217	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R218	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R227	QRD123J-391SX	RESISTOR	390Ω, 1/2W
	R229	QRSA08J-123YN	RESISTOR	12kΩ, 1/10W
	R230	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R240	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R242	QRD161J-102	RESISTOR	1kΩ, 1/6W
	R243	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R244	QRSA08J-152YN	RESISTOR	1.5kΩ, 1/10W

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	R245	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R246	QVZ3518-332AZ	V RESISTOR, REC FM	3.3kΩ
	or	QVZ3523-332AZ	V RESISTOR, REC FM	3.3kΩ
	R247	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
	R248	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R249	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
	R250	QRSA08J-750YN	RESISTOR	75Ω, 1/10W
	R251	QRSA08J-750YN	RESISTOR	75Ω, 1/10W
	R257	QRSA08J-562YN	RESISTOR	5.6kΩ, 1/10W
	R258	QRD161J-562	RESISTOR	5.6kΩ, 1/6W
	R259	QRD161J-561	RESISTOR	560Ω, 1/6W
	R264	QRSA08J-331YN	RESISTOR	330Ω, 1/10W
	R265	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R268	QRSA08J-0R0Y	RESISTOR	0Ω, 1/10W
	R280	QRSA08J-914YN	RESISTOR	910kΩ, 1/10W
	R281	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
	R282	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R283	QRD161J-104	RESISTOR	100kΩ, 1/6W
	R284	QRSA08J-273YN	RESISTOR	27kΩ, 1/10W
	R286	QRD161J-333	RESISTOR	33kΩ, 1/6W
	C201	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C202	QCSA1HJ-390	CAPACITOR	39pF, 50V
	C203	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C204	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C205	QEKF0JM-476	E CAPACITOR	47μF, 6.3V
	C206	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C207	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C208	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C209	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C212	QETA1CM-337	E CAPACITOR	330μF, 16V
	C213	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C214	QETF1AM-476	E CAPACITOR	47μF, 10V
	C215	QETC0JM-108	E CAPACITOR	1000μF, 6.3V
	C216	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C217	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C226	QCSA1HJ-5R0	CAPACITOR	5RpF, 50V
	C227	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C228	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C229	QCSA1HJ-560	CAPACITOR	56pF, 50V
	C235	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C280	QEK61CM-106	E CAPACITOR	10μF, 16V
	C281	QEK61EM-335	E CAPACITOR	3.3μF, 25V
	C282	QCSA1HJ-471	CAPACITOR	470pF, 50V
	C284	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C285	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C286	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C287	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C288	QFN31HJ-471	M CAPACITOR	470pF, 50V
	C289	QCSA1HJ-270	CAPACITOR	27pF, 50V
	C290	QCYA1HK-472	CAPACITOR	0.0047μF, 50V
	C291	QCSA1HJ-5R0	CAPACITOR	5RpF, 50V
	C293	QETC0JM-477	E CAPACITOR	470μF, 6.3V

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	C294	QCFA1HZ-103	CAPACITOR	0.01μF, 50V
	C295	QCTA1CH-101	CAPACITOR	100pF, 16V
	L201	PU48530-101K	COIL	100μH
	L202	PU59152-180J	COIL	18μH
	L203	PU59153-101K	COIL	100μH
	L204	PU48530-101K	COIL	100μH
	L206	PU59152-121J	COIL	120μH
	L280	PU48530-101K	COIL	100μH
	L282	PU60655-2	COIL, SECAM DET	
	EQ201	PELN0742	EQUALIZER	
	or	PU60714	EQUALIZER	
	CN201	PU61044-11	CONNECTOR	

—AUDIO SECTION—

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	IC301	LA7295	IC	
	Q301	2SC2785(FE)	TRANSISTOR	
	or	2SC3199(G)	TRANSISTOR	
	or	2SC1740S(RS)	TRANSISTOR	
	Q302	2SC2785(FE)	TRANSISTOR	
	or	2SC3199(G)	TRANSISTOR	
	or	2SC1740S(RS)	TRANSISTOR	
	Q304	2SC2785(FE)	TRANSISTOR	
	or	2SC3199(G)	TRANSISTOR	
	or	2SC1740S(RS)	TRANSISTOR	
	R301	QRD161J-100	RESISTOR	10Ω, 1/6W
	R302	QRSA08J-683YN	RESISTOR	68kΩ, 1/10W
	R303	QRSA08J-562YN	RESISTOR	5.6kΩ, 1/10W
	R304	QRSA08J-223YN	RESISTOR	22kΩ, 1/10W
	R305	QRSA08J-333YN	RESISTOR	33kΩ, 1/10W
	R306	QRSA08J-4R7YN	RESISTOR	4.7Ω, 1/10W
	R309	QRSA08J-302YN	RESISTOR	3kΩ, 1/10W
	R310	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R311	QRSA08J-821YN	RESISTOR	820Ω, 1/10W
	R314	QRSA08J-561YN	RESISTOR	560Ω, 1/10W
	R315	QRSA08J-621YN	RESISTOR	620Ω, 1/10W
	R316	QRSA08J-121YN	RESISTOR	120Ω, 1/10W
	R317	QRD161J-8R2	RESISTOR	8.2Ω, 1/6W
	R318	QRSA08J-333YN	RESISTOR	33kΩ, 1/10W
	R320	QRSA08J-241YN	RESISTOR	240Ω, 1/10W
	R321	QRSA08J-274YN	RESISTOR	270kΩ, 1/10W
	R322	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R323	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R324	QRSA08J-475YN	RESISTOR	4.7MΩ, 1/10W
	R325	QRSA08J-822YN	RESISTOR	8.2kΩ, 1/10W
	R326	QRSA08J-273YN	RESISTOR	27kΩ, 1/10W
	R327	QRD161J-152	RESISTOR	1.5kΩ, 1/6W
	R328	QRD161J-393	RESISTOR	39kΩ, 1/6W
	R329	QRSA08J-101YN	RESISTOR	100Ω, 1/10W
	R330	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R331	QRSA08J-153YN	RESISTOR	15kΩ, 1/10W
	R332	QRD161J-182	RESISTOR	1.8kΩ, 1/6W
	R333	QRSA08J-362YN	RESISTOR	3.6kΩ, 1/10W
	R344	QRD161J-182	RESISTOR, SILK D302	1.8kΩ, 1/6W
⚠	R345	QRZ0077-8R2X	FUSIBLE RESISTOR	4.7Ω, 1/4W
	C301	QCTA1CH-331	CAPACITOR	330pF, 16V
	C302	QFV71HJ-823	TF CAPACITOR	0.082μF, 50V
	or	QFV11HJ-823	MMT CAPACITOR	0.082μF, 50V
	C303	QETF1HM-475	E CAPACITOR	4.7μF, 50V
	C304	QCYA1HK-472	CAPACITOR	0.0047μF, 50V
	C305	QCYA1CK-223	CAPACITOR	0.022μF, 16V
	C306	QCFA1EZ-823	CAPACITOR	0.082μF, 25V
	C307	QCYA1CK-223	CAPACITOR	0.022μF, 16V
	C308	QCYA1HK-821	CAPACITOR	820pF, 50V
	C311	PU60550-105	E CAPACITOR	1μF
	C312	QETF1CM-106	E CAPACITOR	10μF, 16V
	C313	QCYA1EK-123	CAPACITOR	0.012μF, 25V
	C314	QEKF1HM-105	E CAPACITOR	1μF, 50V
	C315	QEKF1CM-226	E CAPACITOR	22μF, 16V
	C316	QETF1CM-106	E CAPACITOR	10μF, 16V
	C317	QETF1CM-476	E CAPACITOR	47μF, 16V
	C318	QETF1HM-105	E CAPACITOR	1μF, 50V
	C319	QFV71HJ-223	TF CAPACITOR	0.022μF, 50V
	or	QFV11HJ-223	MMT CAPACITOR	0.022μF, 50V
	C321	QEKF1HM-475	TF CAPACITOR	4.7μF, 50V
	L301	PU58308-822J	COIL	8.2mH
⚠	T301	PELN0448	OSC TRANSFORMER	
	CN301	PU61044-4	CONNECTOR	
	CN302	PU61044-2	CONNECTOR	

—SERVO SECTION—

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	IC401	BU2827AS	IC	
	IC402	LM324N	IC	
	or	BA10324	IC	
	IC451	BA7039	IC	
	or	XRA7039	IC	
	D402	1SS133	DIODE	
	or	MA165	DIODE	
	D403	1SS133	DIODE	
	or	MA165	DIODE	
	D405	1SS133	DIODE	
	or	MA165	DIODE	
	D406	MTZ5.1B	ZENER DIODE	
	or	RD5.1ES-T1B2	ZENER DIODE	
	or	UZ5.1BSB	ZENER DIODE	
	or	HZS5.1EB2	ZENER DIODE	
	D409	1SS133	DIODE	
	or	MA165	DIODE	
	R401	QRSA08J-473YN	RESISTOR	47kΩ, 1/10W
	R402	QVZ3518-684AZ	V RESISTOR, SW POINT	680kΩ
	or	QVZ3523-684AZ	V RESISTOR	680kΩ
	R403	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R404	QRD161J-473	RESISTOR	47kΩ, 1/6W
	R406	QRD161J-224	RESISTOR	220kΩ, 1/6W
	R408	QRD161J-473	RESISTOR	47kΩ, 1/6W
	R410	QRSA08J-224YN	RESISTOR	220kΩ, 1/10W

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	R412	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R413	QRSA08J-273YN	RESISTOR	27kΩ, 1/10W
	R414	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R415	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R416	QRD161J-104	RESISTOR	100kΩ, 1/6W
	R417	QRSA08J-123YN	RESISTOR	12kΩ, 1/10W
	R418	QRSA08J-225YN	RESISTOR	2.2MΩ, 1/10W
	R419	QRSA08J-563YN	RESISTOR	56kΩ, 1/10W
	R420	QRSA08J-223YN	RESISTOR	22kΩ, 1/10W
	R421	QRSA08J-222YN	RESISTOR	2.2kΩ, 1/10W
	R422	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R423	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R424	QRSA08J-151YN	RESISTOR	150Ω, 1/10W
	R425	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R426	QRSA08J-473YN	RESISTOR	47kΩ, 1/10W
	R429	QRSA08J-475YN	RESISTOR	4.7MΩ, 1/10W
	R430	QRSA08J-474YN	RESISTOR	470kΩ, 1/10W
	R431	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R433	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R434	QRSA08J-273YN	RESISTOR	27kΩ, 1/10W
	R440	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R450	QRD161J-564	RESISTOR	560kΩ, 1/6W
	R451	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R452	QRSA08J-332YN	RESISTOR	3.3kΩ, 1/10W
	R453	QRSA08J-272YN	RESISTOR	2.7kΩ, 1/10W
	R458	QRSA08J-124YN	RESISTOR	120kΩ, 1/10W
	C401	QFLC1HJ-682Z	M CAPACITOR	0.0068μF, 50V
	or	QFN31HJ-682	M CAPACITOR	0.0068μF, 50V
	C402	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C403	QCYA1HK-472	CAPACITOR	0.0047μF, 50V
	C405	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	C407	QCYA1HK-222	CAPACITOR	0.0022μF, 50V
	C409	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	C411	QEKF1EM-475	E CAPACITOR	4.7μF, 25V
	or	QETF1HM-475	E CAPACITOR	4.7μF, 50V
	C412	QEKF1EM-475	E CAPACITOR	4.7μF, 25V
	or	QETF1HM-475	E CAPACITOR	4.7μF, 50V
	C413	QCYA1HK-221	CAPACITOR	220pF, 50V
	C414	QCC31CJ-182	CAPACITOR	0.0018μF, 16V
	C415	QFV11HJ-274	MMT CAP	0.27μF, 50V
	or	PECA0780-274Z	M CAPACITOR	0.27μF, 50V
	or	QFLA1HJ-274Z	TF CAPACITOR	0.27μF, 50V
	C416	QCSA1HJ-101	CAPACITOR	100pF, 50V
	C417	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C418	QEKF1CM-106	E CAPACITOR	10μF, 16V
	or	QETF1CM-106	E CAPACITOR	10μF, 16V
	C419	QCC31CJ-473	CAPACITOR	0.047μF, 16V
	or	QCC31CK-473	CAPACITOR	0.047μF, 16V
	C420	QEKF1CM-106	E CAPACITOR	10μF, 16V
	or	QETF1CM-106	E CAPACITOR	10μF, 16V
	C421	QEKF1AM-476	E CAPACITOR	47μF, 10V
	or	QETF1AM-476	E CAPACITOR	47μF, 10V
	C422	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C423	QCYA1HK-102	CAPACITOR	0.001μF, 50V
	C424	QEKF1AM-226	E CAPACITOR	22μF, 10V
	or	QETF1AM-226	E CAPACITOR	22μF, 10V
	C425	QCC31CJ-153	CAPACITOR	0.015μF, 16V

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	C426	QFV11HJ-124	MMT CAPACITOR	0.12μF, 50V
	or	PECA0780-124Z	M CAPACITOR	0.13μF, 50V
	C427	QETF1CM-106	E CAPACITOR	10μF, 16V
	or	QEKF1CM-106	E CAPACITOR	10μF, 16V
	C428	QETF1CM-106	E CAPACITOR	10μF, 16V
	or	QEKF1CM-106	E CAPACITOR	10μF, 16V
	C429	QCC31CJ-563	CAPACITOR	0.056μF, 16V
	or	QCC31CK-563	CAPACITOR	0.056μF, 16V
	C452	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	C454	QCC11CK-473	CAPACITOR	0.047μF, 16V
	C455	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	C456	QFV11HJ-104	MM CAPACITOR	0.1μF, 50V
	or	PECA0780-104Z	M CAPACITOR	0.1μF, 50V
	or	QFLA1HJ-104Z	M CAPACITOR	0.1μF, 50V
	C457	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	C458	QEKF1AM-226	E CAPACITOR	22μF, 10V
	C459	QCYA1EK-103	CAPACITOR	0.01μF, 25V
	L451	PU59152-270J	COIL	27μH
	or	PU59988-270J	COIL	27μH
	CN401	PU61044-2	CONNECTOR	
	CN402	PU61044-4	CONNECTOR	
⚠	CP401	ICP-N15	CIRCUIT PROTECTOR	

—MECHANICAL CONTROL SECTION—

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	IC601	M37524M3-172SP	IC	
	IC602	CAT93C46P	IC	
	Q601	DTC114YS	TRANSISTOR	
	D601	1SS133	DIODE	
	or	MA165	DIODE	
	D602	HZS7.5EB2	ZENER DIODE	
	or	MTZ7.5B	ZENER DIODE	
	D603	1SS133	DIODE	
	or	MA165	DIODE	
	D604	1SS133	DIODE	
	or	MA165	DIODE	
	D605	1SS133	DIODE	
	or	MA165	DIODE	
	D606	1SS133	DIODE	
	or	MA165	DIODE	
	R602	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R603	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R604	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R605	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R606	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R607	QRD161J-472	RESISTOR	4.7kΩ, 1/6W
	R608	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R609	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
	R610	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R611	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R612	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R613	QRD161J-472	RESISTOR	4.7kΩ, 1/6W
	R615	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R616	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	R617	QRD161J-472	RESISTOR	4.7kΩ, 1/6W
	R618	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R619	QRSA08J-472YN	RESISTOR	4.7kΩ, 1/10W
	R620	QRSA08J-391YN	RESISTOR	390Ω, 1/10W
	R621	QRD161J-472	RESISTOR	4.7kΩ, 1/6W
	R622	QRD161J-472	RESISTOR	4.7kΩ, 1/6W
	R623	QRSA08J-105YN	RESISTOR	1MΩ, 1/10W
	R624	QRD161J-472	RESISTOR	4.7kΩ, 1/6W
	R625	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R626	QRD161J-473	RESISTOR	47kΩ, 1/6W
	R627	QRSA08J-154YN	RESISTOR	150kΩ, 1/10W
	R628	QRSA08J-333YN	RESISTOR	33kΩ, 1/10W
	R629	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R630	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R631	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R632	QRD161J-563	RESISTOR	56kΩ, 1/6W
	R633	QRSA08J-471YN	RESISTOR	470Ω, 1/10W
	R634	QRSA08J-333YN	RESISTOR	33kΩ, 1/10W
	R635	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R636	QRSA08J-681YN	RESISTOR	680Ω, 1/10W
	R637	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R639	QRSA08J-103YN	RESISTOR	10kΩ, 1/10W
	R641	QRD161J-103	RESISTOR	10kΩ, 1/6W
	C601	QCFA1HZ-223	CAPACITOR	0.022μF, 50V
	C602	QEK61EM-335	E CAPACITOR	3.3μF, 25V
	C604	QEKF1HM-105	E CAPACITOR	1μF, 50V
	C605	QCSA1HJ-121	CAPACITOR	120pF, 50V
	C606	QEKF0JM-107	E CAPACITOR	100μF, 6.3V
	C607	QCTA1CH-330	CAPACITOR	33pF, 16V
	C613	QCC11CJ-104	CAPACITOR	0.1μF, 16V
	C614	QCY41HK-152	CAPACITOR	0.0015μF, 50V
	L601	PU59152-100J	COIL	10μH
⚠	CF601	PEVB0340	RESONATOR	
	CN601	PEMC0915-014	FFC CONNECTOR	
	or	PEMC0916-014	FFC CONNECTOR	
	or	PEMC0917-014	FFC CONNECTOR	
	or	PEMC0918-014	FFC CONNECTOR	
	CN602	PU61044-4	CONNECTOR	
⚠	CP601	ICP-N25	CIRCUIT PROTECTOR	

−REGULATOR SECTION−

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	Q801	2SC3616(MLK)	TRANSISTOR	
	Q802	2SD2166	TRANSISTOR	
	Q803	2SC1740S	TRANSISTOR	
	or	2SC2785(J-E)-T	TRANSISTOR	
	Q804	2SC1740S	TRANSISTOR	
	or	2SC2785(J-E)-T	TRANSISTOR	
	Q805	DTA114ES	TRANSISTOR	
	R801	QRD161J-471	RESISTOR	470Ω, 1/6W
	R802	QRD161J-102	RESISTOR	1kΩ, 1/6W
	R803	QRD161J-223	RESISTOR	22kΩ, 1/6W
	R804	QRD161J-471	RESISTOR	470Ω, 1/6W
	R805	QVZ3518-102AZ	V RESISTOR, SWD 5V	
	or	QVZ3523-102AZ	V RESISTOR	
	R806	QRD161J-471	RESISTOR	470Ω, 1/6W
	R807	QRD161J-474	RESISTOR	470kΩ, 1/6W
	C801	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C802	QETF0JM-107	E CAPACITOR	100μF, 6.3V
	C803	QETF0JM-107	E CAPACITOR	100μF, 6.3V
	C804	QETF1CM-106	E CAPACITOR	10μF, 16V
	C806	QETF1CM-107	E CAPACITOR	100μF, 16V
	L801	PU48530-101K	COIL	100μH
	CN801	PU61044-9	WIRE TRAP, E	
	CN802	PEMC0794-109Z	WIRE TRAP, E	
		PEMC0794-111	WIRE TRAP, EG	
⚠	CP801	ICP-N20	CIRCUIT PROTECTOR	

−RF CONVERTER SECTION−

REF.No	PART No.	PART NAME,DESCRIPTION	
Q902	2SB810H, J	TRANSISTOR	
D901	1SS133	DIODE	
or	MA165	DIODE	
D902	1SS133	DIODE	
or	MA165	DIODE	
D905	1SS133	DIODE	
or	MA165	DIODE	
R903	QRSA08J-393YN	RESISTOR	39kΩ, 1/10W
R904	QRSA08J-102YN	RESISTOR	1kΩ, 1/10W
R951	QRSA08J-473YN	RESISTOR	47kΩ, 1/10W
R952	QRSA08J-473YN	RESISTOR	47kΩ, 1/10W
R953	QRSA08J-0R0Y	RESISTOR	0Ω, 1/10W
R954	QRSA08J-0R0Y	RESISTOR	0Ω, 1/10W
L901	PU48530-100K	COIL	10μH
L903	PU48530-100K	COIL	10μH

−PRE/REC AMP BOARD ASSEMBLY<43>−

REF.No	PART No.	PART NAME,DESCRIPTION	
PWBA	PB10669A2	PRE/REC AMP BOARD ASSEMBLY	
IC501	LA7375	IC	
Q501	2SA1309(RS)	TRANSISTOR	
or	2SA933S(RS)	TRANSISTOR	
or	2SA1267(G)-TJK	TRANSISTOR	
Q502	2SC1740S(RS)	TRANSISTOR	
or	2SC3199(G)	TRANSISTOR	
or	2SC3311A(RS)	TRANSISTOR	
or	2SC536SPA(FG)	TRANSISTOR	
Q504	2SC1740S(RS)	TRANSISTOR	
or	2SC3199(G)	TRANSISTOR	
or	2SC3311A(RS)	TRANSISTOR	
or	2SC536SPA(FG)	TRANSISTOR	
D502	1SS133	DIODE	
or	MA165	DIODE	
R502	QRD161J-331	RESISTOR	330Ω, 1/6W

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	R503	QRD161J-222	RESISTOR	2.2kΩ, 1/6W
	R504	QRD161J-222	RESISTOR	2.2kΩ, 1/6W
	R505	QRD161J-391	RESISTOR	390Ω, 1/6W
	R506	QRD161J-391	RESISTOR	390Ω, 1/6W
	R507	QRD161J-821	RESISTOR	820Ω, 1/6W
	R508	QRD161J-332	RESISTOR	3.3kΩ, 1/6W
	R509	QRD161J-152	RESISTOR	1.5kΩ, 1/6W
	R510	QRD161J-621	RESISTOR	620Ω, 1/6W
	R511	QRD161J-132	RESISTOR	1.3kΩ, 1/6W
	R512	QRD161J-821	RESISTOR	820Ω, 1/6W
	R516	QRD161J-122	RESISTOR	1.2kΩ, 1/6W
	R517	QRD161J-153	RESISTOR	15kΩ, 1/6W
	R518	QRD161J-223	RESISTOR	22kΩ, 1/6W
	R519	QRD161J-333	RESISTOR	33kΩ, 1/6W
	R520	QRD161J-102	RESISTOR	1kΩ, 1/6W
	R521	QRD161J-333	RESISTOR	33kΩ, 1/6W
	R522	QRD161J-622	RESISTOR	6.2kΩ, 1/6W
	R523	QRD161J-102	RESISTOR	1kΩ, 1/6W
	R524	QRD161J-123	RESISTOR	12kΩ, 1/6W
	R525	QRD161J-682	RESISTOR	6.8kΩ, 1/6W
	R528	QRD161J-821	RESISTOR	820Ω, 1/6W
	C502	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C503	QCSB1HJ-360	CAPACITOR	36pF, 50V
	C504	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C507	QCBB1HJ-471	CAPACITOR	470pF, 50V
	C509	PU57601-106MA	E CAPACITOR	10μF, 10V
	C511	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C514	QFV11HJ-823	MMT CAPACITOR	0.082μF, 50V
	or	PECA0780-823Z	TF CAPACITOR	0.082μF, 50V
	C515	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C516	QFV11HJ-224	TF CAPACITOR	0.22μF, 50V
	or	PECA0780-224Z	M CAPACITOR	0.22μF, 50V
	C517	QFV11HJ-224	TF CAPACITOR	0.22μF, 50V
	or	PECA0780-224Z	M CAPACITOR	0.22μF, 50V
	C518	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C519	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C520	QCBB1HJ-102	CAPACITOR	0.001μF, 50V
	C524	QCBB1HJ-820	CAPACITOR	82pF, 50V
	C526	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C528	QEE40JM-475	TANTAL CAPACITOR	4.7μF, 6.3V
	C529	QCSB1HJ-100	CAPACITOR	10pF, 50V
	C530	QER60JM-476	E CAPACITOR	47μF, 6.3V
	C532	QCBB1HJ-271	CAPACITOR	270pF, 50V
	L503	PU59152-470J	COIL	47μH
	L504	PU59152-270J	COIL	27μH
	L506	PU59152-121J	COIL	120μH
	L507	PU48530-101K	COIL	100μH
	L510	PU48530-101K	COIL	100μH
	SLD1	PQ34320	S.CASE(P/R)	
	SLD2	PQ34322	S.COVER L(P/R)	
	CN501	PU60910-11	CONNECTOR	
	CN503	PU60566-104	CONNECTOR	

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VIDEO UNIT BOARD ASSEMBLY 〈05〉

⚠	REF.No	PART No.	PART NAME,DESCRIPTION
	PWBA	PB10554H	VIDEO UNIT BOARD ASSEMBLY
	IC1	JCP0016-2	IC
	IC2	TL8827P	IC
	Q1	2SA1576(QRS)	TRANSISTOR
	Q5	2SA1576(QRS)	TRANSISTOR
	Q10	2SC4081(QRS)	TRANSISTOR
	Q11	DTC144WU	TRANSISTOR
	Q12	DTC144WU	TRANSISTOR
	Q13	DTC144WU	TRANSISTOR
	Q14	DTC144WU	TRANSISTOR
	Q18	2SC4081(QRS)	TRANSISTOR
	Q19	2SC4081(QRS)	TRANSISTOR
	Q20	2SC4081(QRS)	TRANSISTOR
	Q21	2SA1576(QRS)	TRANSISTOR
	Q23	DTC144WU	TRANSISTOR
	Q24	2SA1576(QRS)	TRANSISTOR
	Q25	2SC4081(QRS)	TRANSISTOR
	Q26	2SC4081(QRS)	TRANSISTOR
	Q28	2SC4081(QRS)	TRANSISTOR
	Q29	2SC4081(QRS)	TRANSISTOR
	Q30	2SC4081(QRS)	TRANSISTOR
	Q31	DTA124EU	TRANSISTOR
	Q32	DTC144WU	TRANSISTOR
	Q33	DTC114WU	TRANSISTOR
	D1	1SS292Y	DIODE
	D3	1SS133	DIODE
	or	MA165	DIODE
	D4	1SS133	DIODE
	or	MA165	DIODE
	D5	1SS133	DIODE
	or	MA165	DIODE
	D6	1SS133	DIODE
	or	MA165	DIODE
	D7	DAN202U	DIODE
	D11	1SS133	DIODE
	or	MA165	DIODE
	D12	1SS133	DIODE
	or	MA165	DIODE
	D14	1SS133	DIODE
	or	MA165	DIODE
	D15	1SS133	DIODE
	or	MA165	DIODE
	D17	DAN202U	DIODE
	D19	1SS133	DIODE
	or	MA165	DIODE
	D20	1SS133	DIODE
	or	MA165	DIODE
	D21	1SS133	DIODE
	or	MA165	DIODE

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	D202	DAN202U	DIODE	
	R1	NRSA63J-681N	RESISTOR	680Ω, 1/16W
		or NRSA63J-681NC	RESISTOR	680Ω, 1/16W
	R2	NRSA63J-475N	RESISTOR	4.7MΩ, 1/16W
		or NRSA63J-475NC	RESISTOR	4.7MΩ, 1/16W
	R3	NRSA63J-475N	RESISTOR	4.7MΩ, 1/16W
		or NRSA63J-475NC	RESISTOR	4.7MΩ, 1/16W
	R5	NRSA63J-103N	RESISTOR	10kΩ, 1/16W
		or NRSA63J-103NC	RESISTOR	10kΩ, 1/16W
	R6	NRSA63J-361N	RESISTOR	360Ω, 1/16W
		or NRSA63J-361NC	RESISTOR	360Ω, 1/16W
	R10	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R11	NRSA63J-681N	RESISTOR	680Ω, 1/16W
		or NRSA63J-681NC	RESISTOR	680Ω, 1/16W
	R12	ERS-L39J-102U	RESISTOR	
	R13	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R16	NRSA63J-392N	RESISTOR	3.9kΩ, 1/16W
		or NRSA63J-392NC	RESISTOR	3.9kΩ, 1/16W
	R17	NVP1301-222N	V.RESISTOR, PB Y LEVEL, 2.2K	
	R18	NRSA63J-333N	RESISTOR	33kΩ, 1/16W
		or NRSA63J-333NC	RESISTOR	33kΩ, 1/16W
	R19	NRSA63J-823N	RESISTOR	82kΩ, 1/16W
		or NRSA63J-823NC	RESISTOR	82kΩ, 1/16W
	R21	NRSA63J-331N	RESISTOR	330Ω, 1/16W
		or NRSA63J-331NC	RESISTOR	330Ω, 1/16W
	R22	NRSA63J-621N	RESISTOR	620Ω, 1/16W
		or NRSA63J-621NC	RESISTOR	620Ω, 1/16W
	R23	NRSA63J-561N	RESISTOR	560Ω, 1/16W
		or NRSA63J-561NC	RESISTOR	560Ω, 1/16W
	R24	NRSA63J-182N	RESISTOR	1.8kΩ, 1/16W
		or NRSA63J-182NC	RESISTOR	1.8kΩ, 1/16W
	R25	NRSA63J-222N	RESISTOR	2.2kΩ, 1/16W
		or NRSA63J-222NC	RESISTOR	2.2kΩ, 1/16W
	R26	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R27	NRSA63J-183N	RESISTOR	18kΩ, 1/16W
		or NRSA63J-183NC	RESISTOR	18kΩ, 1/16W
	R28	NRSA63J-822N	RESISTOR	8.2kΩ, 1/16W
		or NRSA63J-822NC	RESISTOR	8.2kΩ, 1/16W
	R29	NRSA63J-562N	RESISTOR	5.6kΩ, 1/16W
		or NRSA63J-562NC	RESISTOR	5.6kΩ, 1/16W
	R30	NRSA63J-562N	RESISTOR	5.6kΩ, 1/16W
		or NRSA63J-562NC	RESISTOR	5.6kΩ, 1/16W
	R31	NRSA63J-183N	RESISTOR	18kΩ, 1/16W
		or NRSA63J-183NC	RESISTOR	18kΩ, 1/16W
	R32	NRSA63J-562N	RESISTOR	5.6kΩ, 1/16W
		or NRSA63J-562NC	RESISTOR	5.6kΩ, 1/16W
	R33	NRSA63J-562N	RESISTOR	5.6kΩ, 1/16W
		or NRSA63J-562NC	RESISTOR	5.6kΩ, 1/16W
	R37	NRSA63J-162N	RESISTOR	1.6kΩ, 1/16W
		or NRSA63J-162NC	RESISTOR	1.6kΩ, 1/16W
	R38	NRSA63J-332N	RESISTOR	3.3kΩ, 1/16W
		or NRSA63J-332NC	RESISTOR	3.3kΩ, 1/16W
	R40	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R41	NVP1301-223N	V.RESISTOR, CARRIER, 22K	

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	R42	NVP1301-103N	V.RESISTOR, DEVIATION, 10K	
	R43	NRSA63J-222N	RESISTOR	2.2kΩ, 1/16W
		or NRSA63J-222NC	RESISTOR	2.2kΩ, 1/16W
	R44	NRSA63J-432N	RESISTOR	4.3kΩ, 1/16W
		or NRSA63J-432NC	RESISTOR	4.3kΩ, 1/16W
	R45	NRSA63J-122N	RESISTOR	1.2kΩ, 1/16W
		or NRSA63J-122NC	RESISTOR	1.2kΩ, 1/16W
	R46	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
	R47	NRSA63J-103N	RESISTOR	10kΩ, 1/16W
		or NRSA63J-103NC	RESISTOR	10kΩ, 1/16W
	R48	NRSA63G-911N	RESISTOR	910Ω, 1/16W
		or NRSA63G-911NC	RESISTOR	910Ω, 1/16W
	R49	NRSA63J-103N	RESISTOR	10kΩ, 1/16W
		or NRSA63J-103NC	RESISTOR	10kΩ, 1/16W
	R51	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R52	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R53	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R54	NRSA63J-242N	RESISTOR	2.4kΩ, 1/16W
		or NRSA63J-242NC	RESISTOR	2.4kΩ, 1/16W
	R55	NRSA63J-392N	RESISTOR	3.9kΩ, 1/16W
		or NRSA63J-392NC	RESISTOR	3.9kΩ, 1/16W
	R56	NVP1301-152N	V.RESISTOR, NC BALANCE, 1.5K	
	R57	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R58	NRSA63J-821N	RESISTOR	820Ω, 1/16W
		or NRSA63J-821NC	RESISTOR	820Ω, 1/16W
	R59	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R60	NVP1301-103N	V.RESISTOR, EE Y LEVEL, 10K	
	R61	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R62	NRSA63J-334N	RESISTOR	330kΩ, 1/16W
		or NRSA63J-334NC	RESISTOR	330kΩ, 1/16W
	R64	NVP1301-332N	V.RESISTOR, WHITE CLIP, 3.3K	
	R65	NRSA63J-103N	RESISTOR	10kΩ, 1/16W
		or NRSA63J-103NC	RESISTOR	10kΩ, 1/16W
	R66	NRSA63J-434N	RESISTOR	430kΩ, 1/16W
		or NRSA63J-434NC	RESISTOR	430kΩ, 1/16W
	R67	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R68	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R69	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W
	R70	NRSA63J-471N	RESISTOR	470Ω, 1/16W
		or NRSA63J-471NC	RESISTOR	470Ω, 1/16W
	R71	NRSA63J-122N	RESISTOR	1.2kΩ, 1/16W
		or NRSA63J-122NC	RESISTOR	1.2kΩ, 1/16W
	R72	NRSA63J-333N	RESISTOR	33kΩ, 1/16W
		or NRSA63J-333NC	RESISTOR	33kΩ, 1/16W
	R73	NRSA63J-333N	RESISTOR	33kΩ, 1/16W
		or NRSA63J-333NC	RESISTOR	33kΩ, 1/16W
	R74	NRSA63J-681N	RESISTOR	680Ω, 1/16W
		or NRSA63J-681NC	RESISTOR	680Ω, 1/16W
	R75	NRSA63J-561N	RESISTOR	560Ω, 1/16W
		or NRSA63J-561NC	RESISTOR	560Ω, 1/16W
	R76	NRSA63J-102N	RESISTOR	1kΩ, 1/16W
		or NRSA63J-102NC	RESISTOR	1kΩ, 1/16W

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	R77	NRSA63J-562N	RESISTOR	5.6kΩ, 1/16W
	or	NRSA63J-562NC	RESISTOR	5.6kΩ, 1/16W
	R78	NRSA63J-681N	RESISTOR	680Ω, 1/16W
	or	NRSA63J-681NC	RESISTOR	680Ω, 1/16W
	R79	NRSA63J-222N	RESISTOR	2.2kΩ, 1/16W
	or	NRSA63J-222NC	RESISTOR	2.2kΩ, 1/16W
	R81	NRSA63J-475N	RESISTOR	4.7MΩ, 1/16W
	or	NRSA63J-475NC	RESISTOR	4.7MΩ, 1/16W
	R83	NRSA63J-272N	RESISTOR	2.7kΩ, 1/16W
	or	NRSA63J-272NC	RESISTOR	2.7kΩ, 1/16W
	R84	NRSA63J-105N	RESISTOR	1MΩ, 1/16W
	or	NRSA63J-105NC	RESISTOR	1MΩ, 1/16W
	R85	NRSA63J-155N	RESISTOR	1.5MΩ, 1/16W
	or	NRSA63J-155NC	RESISTOR	1.5MΩ, 1/16W
	R88	NRSA63J-101N	RESISTOR	100Ω, 1/16W
	R89	NRSA63J-561N	RESISTOR	560Ω, 1/16W
	R90	NRSA63J-562N	RESISTOR	5.6kΩ, 1/16W
	R208	NRSA63J-472N	RESISTOR	4.7kΩ, 1/16W
	or	NRSA63J-472NC	RESISTOR	4.7kΩ, 1/16W
	C1	NCS31HJ-221A	CAPACITOR	220pF, 50V
	C2	NCS31HJ-220A	CAPACITOR	22pF, 50V
	C4	NCS31HG-561A	CAPACITOR	560pF, 50V
	C8	QCFA1EZ-473	CAPACITOR	0.047μF, 25V
	C9	NCS31HJ-150A	CAPACITOR	15pF, 50V
	C11	NCS31HJ-680A	CAPACITOR	68pF, 50V
	C12	NCS31HJ-220A	CAPACITOR	22pF, 50V
	C13	NCS31HG-121A	CAPACITOR	120pF, 50V
	C14	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C17	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C18	NCS31HJ-820A	CAPACITOR	82pF, 50V
	C19	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C20	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C21	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C22	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C23	QETC1CM-106	E CAPACITOR	10μF, 16V
	C24	QEN61AM-226	NP E CAPACITOR	22μF, 10V
	or	QENC1AM-226	NP E CAPACITOR	22μF, 10V
	C25	QETC1CM-106	E CAPACITOR	10μF, 16V
	C26	PU57601-106MA	E CAPACITOR	10μF, 60
	C27	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C29	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C30	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C31	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C32	NCS31HG-201A	CAPACITOR	200pF, 50V
	C33	NCB31EK-223A	CAPACITOR	0.022μF, 25V
	C34	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C35	NCS31HG-150A	CAPACITOR	15pF, 50V
	C36	QCF81CZ-105	CAPACITOR	1μF, 16V
	C37	NCB31EK-223A	CAPACITOR	0.022μF, 25V
	C38	NCS31HJ-101A	CAPACITOR	100pF, 50V
	C40	NCS31HJ-390A	CAPACITOR	39pF, 50V
	C41	NCB31CK-333A	CAPACITOR	0.033μF, 16V
	C42	QETC0JM-476	E CAPACITOR	47μF, 6.3V
	C43	QETC1CM-106	E CAPACITOR	10μF, 16V
	C44	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C45	QETC1CM-106	E CAPACITOR	10μF, 16V

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	C46	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C47	QETC1HM-105	E CAPACITOR	1μF, 50V
	C48	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C49	NCB31HK-472A	CAPACITOR	0.0047μF, 50V
	C50	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C51	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C52	QETC1HM-105	E CAPACITOR	1μF, 50V
	C53	QETC1CM-106	E CAPACITOR	10μF, 16V
	C54	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C56	QEN61EM-475	NP E CAPACITOR	4.7μF, 25V
	or	QENC1EM-475	NP E CAPACITOR	4.7μF, 25V
	C57	QETC1EM-335	E CAPACITOR	3.3μF, 25V
	C58	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C59	NCF31CZ-473A	CAPACITOR	0.047μF, 16V
	C60	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C61	QETC1HM-474	E CAPACITOR	0.47μF, 50V
	C62	NCB31CK-333A	CAPACITOR	0.033μF, 16V
	C63	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C64	QETC1HM-104	E CAPACITOR	0.1μF, 50V
	C65	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C66	QETC1HM-104	E CAPACITOR	0.1μF, 50V
	C67	NCF31CZ-473A	CAPACITOR	0.047μF, 16V
	C69	NCB31HK-103A	CAPACITOR	0.01μF, 50V
	C71	NCB31HK-182A	CAPACITOR	0.0018μF, 50V
	C72	QETC1EM-475	E CAPACITOR	4.7μF, 25V
	C73	QETC1HM-105	E CAPACITOR	1μF, 50V
	C74	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C75	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C76	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C77	QETC1HM-104	E CAPACITOR	0.1μF, 50V
	C78	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C79	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C80	NCS31HJ-240A	CAPACITOR	24pF, 50V
	C82	QETC1HM-225	E CAPACITOR	2.2μF, 50V
	C84	NCS31HJ-180A	CAPACITOR	18pF, 50V
	C91	NCS31HJ-620A	CAPACITOR	62pF, 50V
	C93	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C96	NCF31HZ-103A	CAPACITOR	0.01μF, 50V
	C97	NCB31CK-333A	CAPACITOR	0.033μF, 16V
	C98	NCB31HK-102A	CAPACITOR	0.001μF, 50V
	C99	NCS31HJ-180A	CAPACITOR	18pF, 50V
	C100	NCS31HG-361A	CAPACITOR	360pF, 50V
	C102	QCYA1EK-104	CAPACITOR	0.1μF, 25V
	L1	PU58201-121J	COIL	120μH
	L3	PU59152-330J	COIL	33μH
	L4	PU59152-330J	COIL	33μH
	L6	PU59152-820J	COIL	82μH
	L7	PU59152-221J	COIL	220μH
	L8	PU48530-101K	COIL	100μH
	L9	PU48530-101K	COIL	100μH
	L10	PU59152-680J	COIL	68μH
	L11	PU48530-101K	COIL	100μH
	L12	PU48530-101K	COIL	100μH
	L13	PU48530-561J	COIL	560μH
	L15	PU59152-150J	COIL	15μH

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	L16	PU59152-820J	COIL	82μH
	LPF1	PELN0477	LOW PASS FILTER	
	or	PELN0623	LOW PASS FILTER	
	LPF2	PELN0478	LOW PASS FILTER	
	or	PELN0621	LOW PASS FILTER	
	LPF3	PU60128-2	LOW PASS FILTER	
	or	PELN0622	LOW PASS FILTER	
	DL1	PU60490	COMB FILTER	
	or	PU60340-3	2H DELAY LINE	
	or	PU58971-4	2H DELAY LINE	
	or	PU60222-2	2H DELAY LINE	
⚠	X1	PEVB0386	CRYSTAL RESONATOR	
⚠	or	PU60653-2	CRYSTAL RESONATOR	
	SLD1	PQ45174	SHIELD PLATE	
	SLD2	PQ45173-1-1	SHIELD CASE	
	CN1	PEMC0712-114	PIN HEADER	
	CN2	PEMC0712-113	PIN HEADER	
	CN3	PEMC0712-113	PIN HEADER	

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AUDIO/CONTROL HEAD BOARD 〈12〉

REF.No	PART No.	PART NAME,DESCRIPTION
PWBA1	PB30170	AUDIO CONTROL HEAD BOARD
CN1	PU60910-106	WIRE TRAP

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TIMER/DISP/SW BOARD ASSEMBLY 〈21〉

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	PWBA	PB10667A-01	TIMER/DISPLAY/SW BOARD ASSY, E	
		PB10667B-01	TIMER/DISPLAY/SW BOARD ASSY, EG	
	IC1	UPD75212AGF-559	IC	
	IC2	IC-PST523H-2	IC	
	IC101	GP1U581X	IR DETECT UNIT	
	or	HC-377	IR DETECT UNIT	
	Q1	2SC3199(G)	TRANSISTOR	
	or	2SC3311A(RS)	TRANSISTOR	
	or	2SC536SPA(FG)	TRANSISTOR	
	or	2SC1740S(RS)	TRANSISTOR	
	D1	RD9.1ES-T1B2	ZENER DIODE	
	D2	1SS133	DIODE	
	or	MA165	DIODE	
	D3	1SS133	DIODE	
	or	MA165	DIODE	
	D4	11ES2	DIODE	
	D5	11ES2	DIODE	
	D6	RD10ES-T1B2	ZENER DIODE	
	D7	1SS133	DIODE	
	or	MA165	DIODE	
	D101	SLH-34VC3F	LE DIODE, POWER	
	D111	1SS132	DIODE	
	D112	1SS132	DIODE	
	R1	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R2	QRD161J-472	RESISTOR	4.7kΩ, 1/6W
	R3	QRD161J-273	RESISTOR	27kΩ, 1/6W
	R4	QRD161J-682	RESISTOR	6.8kΩ, 1/6W
	R5	QRD161J-333	RESISTOR	33kΩ, 1/6W
	R6	QRD161J-333	RESISTOR	33kΩ, 1/6W
	R7	QRD161J-102	RESISTOR	1kΩ, 1/6W
	R8	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R9	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R10	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R11	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R12	QRD161J-333	RESISTOR	33kΩ, 1/6W
	R13	QRD161J-271	RESISTOR	270Ω, 1/6W
	R14	QRD161J-271	RESISTOR	270Ω, 1/6W
	R15	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R16	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R17	QRD161J-472	RESISTOR	4.7kΩ, 1/6W
	R22	QRD161J-271	RESISTOR	270Ω, 1/6W
	R23	QRD161J-271	RESISTOR	270Ω, 1/6W
	R24	QRD161J-224	RESISTOR	220kΩ, 1/6W
	R25	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R26	QRD161J-103	RESISTOR	10kΩ, 1/6W
	R27	QRD161J-333	RESISTOR	33kΩ, 1/6W
	R101	QRD161J-271	RESISTOR	270Ω, 1/6W
	RA1	QRB077J-104	RESISTOR ARRAY	
	or	QRB079J-104	NETWORK RESISTOR	
	RA2	QRB045J-333M	RESISTOR ARRAY	
	or	QRB045J-333XF	RESISTOR ARRAY	
	C2	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C3	QCVB1CN-103	CAPACITOR	0.01μF, 16V
	C4	QETC1CM-106	E CAPACITOR	10μF, 16V
	C5	PU60676-473	E CAPACITOR	0.047μF, 5.5V
	or	QEA40HZ-473	E CAPACITOR (DOUBLE)	0.047μF, 5.5V
	C6	QAT3120-200	TRIMMER CAPACITOR, CLOCK	20pF,
	C7	QCSB1HJ-120	CAPACITOR	12pF, 50V
	C8	QETC0JM-107	E CAPACITOR	100μF, 6.3V
	C9	QETC1HM-106	E CAPACITOR	10μF, 50V
	C10	QETC1CM-106	E CAPACITOR	10μF, 16V
	C11	QCBB1HJ-101	CAPACITOR	100pF, 50V
	C12	QCBB1HJ-101	CAPACITOR	100pF, 50V
	C13	QCF11HP-473	CAPACITOR	0.047μF, 50V
	C14	QCVB1CN-103	CAPACITOR	0.01μF, 16V
⚠	X1	PEVM0271	CRISTAL RESONATOR	
⚠	or	PEVB0393	CRYSTAL RESONATOR	
	S1	PESW0525-02Z	TACT SWITCH, POWER	
	or	PU60392-2-2	TACT SWITCH	
	or	PU60975-2Z	TACT SWITCH	

⚠	REF.No	PART No.	PART NAME,DESCRIPTION	
	S2	PESW0525-02Z	TACT SWITCH, STOP	
		or PU60392-2-2	TACT SWITCH	
		or PU60975-2Z	TACT SWITCH	
	S3	PESW0525-02Z	TACT SWITCH, FF	
		or PU60392-2-2	TACT SWITCH	
		or PU60975-2Z	TACT SWITCH	
	S4	PESW0525-02Z	TACT SWITCH, REW	
		or PU60392-2-2	TACT SWITCH	
		or PU60975-2Z	TACT SWITCH	
	S5	PESW0525-02Z	TACT SWITCH, CH+	
		or PU60392-2-2	TACT SWITCH	
		or PU60975-2Z	TACT SWITCH	
	S6	PESW0525-02Z	TACT SWITCH, REC	
		or PU60392-2-2	TACT SWITCH	
		or PU60975-2Z	TACT SWITCH	
	S7	PESW0525-02Z	TACT SWITCH, PLAY	
		or PU60392-2-2	TACT SWITCH	
		or PU60975-2Z	TACT SWITCH	
	S8	PESW0525-02Z	TACT SWITCH, CH-	
		or PU60392-2-2	TACT SWITCH	
		or PU60975-2Z	TACT SWITCH	
	FDP1	PEDP0044	FLUORESCENT DISPLAY PANEL	
	HD1	PQ34290	FDP HOLDER(L)	
	HD2	PQ34291	FDP HOLDER(R)	
	HD3	PQM30038-1-2	LED HOLDER	
	CN1	PEMC0794-111	WIRE TRAP, EG	
		PEMC0794-109Z	WIRE TRAP, E	

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UPPER DRUM BOARD ⟨41⟩

PWB	PDM3017	BOARD (UPPER DRUM)	

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DECK TERMINAL BOARD ASSEMBLY ⟨51⟩

PWBA	PB10653C1	DECK TERMINAL BOARD ASSEMBLY	
Q1	PU60625	END SENSOR	
D1	RD6.2ES-T1B2	ZENER DIODE	
	or MTZ6.2BT-77	ZENER DIODE	
R1	QRD161J-102	RESISTOR	1kΩ, 1/6W
R3	QRD161J-331	RESISTOR	330Ω, 1/6W
R4	QRD161J-331	RESISTOR	330Ω, 1/6W
C1	QCVB1CM-103	CAPACITOR	0.01μF, 16V
C2	QCFB1EZ-223	CAPACITOR	0.022μF, 25V
PS1	PS5705HR	PH INTERRUPTER	

⚠	REF.No	PART No.	PART NAME,DESCRIPTION
	CN1	PEMC0915-014	FFC CONNECTOR
		or PEMC0916-014	FFC CONNECTOR
		or PEMC0917-014	FFC CONNECTOR
		or PEMC0918-014	FFC CONNECTOR
	CN2	PU60642	7PIN CONNECTOR
	CN3	PU60640	4PIN CONNECTOR

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LOARDING MDA BOARD ASSEMBLY ⟨55⟩

	PWBA	PB10653B2	LOADING MDA BOARD ASSEMBLY	
⚠	IC1	BA6418N	IC	
⚠		or XRA6418N	IC	
	C1	QETA1CM-476	E CAPACITOR	47μF, 16V
	SPC1	PQM30029-163	SPACER	
	CN1	PU60910-104	WIRE TRAP	

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CASSETTE HOUSING BOARD ⟨56⟩

PWB1	PB40041-01-01	CASSETTE HOUSING BOARD	
Q2	PN268VI	PHOTO TRANSISTOR	
C1	QCC11EJ-103	CAPACITOR	0.01μF, 25V
PHS3	PU60629	CASSETTE SENSOR	
CN2	PU60639	4PIN SOCKET	

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FULL ERASE HEAD BOARD ⟨61⟩

PWBA	PB30162	FULL ERASE BOARD
CN1	PU60910-102	WIRE TRAP

SECTION 6

TECHNICAL INFORMATIONS

1. Mechacon CPU pin function (IC601)

PIN NO.	LABEL	IN/OUT	NOTE
1	Vcc	-	5V
2	VREF	-	5V
3	LCM1	IN	
4	S.CURVE	IN	AFC DETECTION (for TUNING)
5	FMIN	IN	AUTO TRACKING DATA (AVERAGE FM)
6	LCM2	OUT	LOADING MOTOR CONTROLFMIN
7	REV(L)	OUT	CAPSTAN MOTOR REVERSE MODE:L
8	END S.	IN	END SENSOR,TRAILER TAPE DETECT(DET ON:L)
9	CASS(L)	IN	CASSETTE INPUT/OUTPUT DETECT (DET ON:L)
10	REC SF(L)	IN	DETECTS ERASE PROTECT TAB (TAB ABSENT:L)
11	PAUSE(L)	OUT	CAPSTAN MOTOR CONTROL (PAUSE:L,NORMAL:H)
12	SERVO(H)	OUT	CAPSTAN MOTOR CONTROL (SERVO:L,MECHACON:H)
13	C.CTL V	IN	CAPSTAN MOTOR CONTROL/CORRECTION
14	D.CTL V	IN	DRUM MOTOR CONTROL/CORRECTION
15	LSA	IN	MECHANISM MODE DETECT
16	SYNC.DET	IN	SYNC DETECT (DET ON:L),BLUE BACK CONTROL
17	D.FF	IN	DRUM MOTOR SPEED DETECT AND TIMING CONTROL
18	CTL.P	IN	CONTROL PULSE IN,MODE DETECT,BLANK TAPE DETECT
19	STT.S	IN	START SENSOR,LEADER TAPE DETECT(DET ON:L)
20	V.PULSE	OUT	V PULSE OUTPUT(SPECIAL PLAYBACK)
21	H.SEL	OUT	HEAD SELECT SIGNAL OUTPUT
22	PLL DATA	OUT	TUNING DATA OUTPUT
23	D.START	OUT	DRUM START MODE
24	TU FG	IN	TAKE-UP REEL ROTATION DETECT,TAPE REMAINING DATA
25	LSB	IN	MECHANISM MODE DETECT
26	CAP FG	IN	MODE DETECT,TAPE REMAINING DATA
27	CN Vss	-	NC
28	RESET	IN	RESET AT CONNECT VCR TO AC
29	X IN	IN	MEIN SYSTEM CLOCK
30	X OUT	OUT	(4MHz)
31	ϕ	-	NC
32	Vss	-	GND
33	S.DATA	OUT	SERVO IC CONTROL DATA(16BIT)
34	M DATA	IN/OUT	MEMORY DATA CONTROL (WRITE/READ)
35	S/M CLK	OUT	SERVO/MECHACON DATA TRANSFER CLOCK
36	M CE	OUT	CHIP ENABLE
37	A/M/S	OUT	HEAD SELECT(MAIN:H /AUTO:M /SLOW:L)
38	LP SPCL	OUT	LP MODE:H
39	AUX(H)	OUT	INPUT SELECT (AUX MODE:H)
40	REC ST(H)	OUT	REC START :H
41	REC ST(L)	OUT	REC START :L
42	REC(L)	OUT	REC MODE:L
43	OPT 1	-	GND
44	OPT 2	-	GND
45	P.CTL	OUT	POWER ON:L,OFF:H
46	PB VIDEO	OUT	VIDEO MODE SECTION(VIDEO :L)
47	PHILIPS	-	TEST POINT for SERVO (PHILIPS)
48	P.MUTE(L)	OUT	PICTURE MUTE CONTROL (MUTE ON:L)
49	SP(L)	OUT	SP MODE (H)
50	SP	OUT	SP MODE (L)
51	EE(L)	OUT	EE MODE:L
52	AUX(L)	OUT	INPUT SELECT (AUX MODE:L)
53	A.MUTE(H)	OUT	AUDIO MUTE:H
54	VP ON(L)	OUT	SPECIAL PB MODE :L
55	TU CTL	OUT	TUNER CONTROL (TUNER MODE:H)
56	V.MUTE	OUT	PICTURE MUTE (MUTE ON:H)
57	AFC DEF	OUT	AFC CONTROL (AFC OFF:L)
58	UHF	OUT	BAND SELECT (UHF :L)
59	HIPER	OUT	BAND SELECT (HIPER :L)
60	VHF-H	OUT	BAND SELECT (VHF-H :L)
61	VHF-L	OUT	BAND SELECT (VHF-L :L)
62	T.CLK	IN	TIMER/MECHACON SERIAL DATA TRANSFER CLOCK
63	T.DATA	IN/OUT	TIMER/MECHACON SERIAL DATA
64	LP SPCL	OUT	LP MODE : L

Table 6-1
Mechacon CPU pin function (IC601)

2. Timer CPU pin function

Pin NO.	LABEL	IN/OUT	NOTE
1	RESET	IN	RESET AT CONNECT VCR TO AC
2	4G	OUT	COLUMN DIPLAY DATA OUTPUT
3	3G		
4	2G		
5	1G		
6	NC	-	NC
7	NC	-	NC
8	NC	-	NC
9	NC	-	NC
10	NC	-	NC
11	NC	-	NC
12	Sp	OUT	SEGMENT DISPLAY DATA / KEY SCAN PULSE OUTPUT
13	So		
14	Sn		
15	Sm		
16	Sl		
17	Sk		
18	V LOAD	IN	FOR FDP DRIVE (-28V)
19	V PRE	IN	FOR FDP DRIVE (-5V)
20	Sj	OUT	SEGMENT DISPLAY DATA / KEY SCAN PULSE OUTPUT
21	Si		
22	Sh		
23	Sg		
24	Sf		
25	Se		
26	VCC	-	5V
27	Sd	OUT	SEGMENT DISPLAY DATA / KEY SCAN PULSE OUTPUT
28	Sc		
29	Sb		
30	Sa		
31	POWER DOWN	IN	POWER DOWN DETECT (DET ON :L)
32	NC	-	NC
33	NC	-	NC
34	TEST	IN	TEST POINT (CLOCK ADJUST/FDP CHECK)
35	RC IN	IN	REMOTE DATA (16 bit A/B CODE)INPUT
36	NC	-	NC
37	CNT PULSE	IN	LINEAR TIME COUNTOR DATA (1/30 COUNT DOWN)
38	CNT PULSE	IN	LINEAR TIME COUNTOR DATA (1/30 COUNT DOWN)
39	KS0	IN	KEY SCAN DATA INPUT
40	KS1		
41	KS2		
42	KS3		
43	M/C DATA	IN/OUT	TIMER /MECHACON SERIAL DATA (16 bit DATA)
44	M/C CLK	OUT	TIMER MECHACON DATA TRANSFER CLOCK
45	S DA	IN/OUT	VIDEO PROGRAMMING SYSTEM
46	S CL	OUT	VIDEO PROGRAMMING SYSTEM
47	NC	-	NC
48	NC	-	NC
49	NC	-	NC
50	NC	-	NC
51	POWER	OUT	LED CONTROL (LED ON :L)
52	NC	-	NC
53	NC	-	NC
54	NC	-	NC
55	NC	-	NC
56	OSC 2	OUT	MAIN SYSTEM CLOCK
57	OSC 1	IN	(4.19MHz)
58	Vss	-	GND
59	GND	-	GND
60	NC	-	NC
61	NC	-	NC
62	NC	-	NC
63	NC	-	NC
64	NC	-	NC

Table 6-2
Timer CPU pin function

E. & O. E. No. 82295